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# Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 37

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# Minnesota Medicine

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## EPIDEMIC ACUTE GLOMERULONEPHRITIS AT RED LAKE

HERMAN KLEINMAN, M.D.

Red Lake, Minnesota

THERE IS a growing awareness that acute glomerulonephritis can and does occur in epidemics. Rammelkamp and Weaver<sup>4</sup> have summarized the larger outbreaks as well as instances where multiple cases have occurred in small population units and in family groups. The same investigators<sup>2</sup> are now following a group of 140 cases which occurred on a military installation in Maryland. The Epidemic Intelligence Service of the United States Public Health Service<sup>6</sup> has recently investigated two outbreaks of nephritis in two of the southeastern states. In 1953, Reed<sup>5</sup> reported an epidemic of twenty-two cases which occurred in a rural area of Nova Scotia.

Scarlet fever and streptococcal infections of the upper respiratory tract are recognized as the common precursors of acute glomerulonephritis. However, it is generally accepted that glomerulonephritis occurring after scarlet fever has not been as common during the past several decades as in former years. The association of skin lesions and glomerulonephritis has been known for over sixty years. Yet, it is only comparatively recently that this relationship has been stressed. Callaway and O'Rear,<sup>1</sup> in reporting on seventy-three cases of glomerulonephritis seen over a period of four years, remark that about half were associated with skin lesions of a pyoderma character and not with any upper respiratory infection.

The epidemic reported here, occurred on the Red Lake Indian Reservation. This reservation is a relatively isolated area in northern Minne-

sota about 900 square miles in extent. Its population is approximately 2,800, and is distributed among the three villages of Red Lake, Redby, and Ponemah. Red Lake and Redby are five miles apart and Ponemah, across the lake, is twenty-five and thirty miles away, respectively, from the other two villages. The beginnings of the epidemic were first noted in a report submitted to the Branch of Health, Bureau of Indian Affairs, and to the National Office of Vital Statistics. This report is dated August 14, 1953, and in part, it says: "You will notice that the monthly report for July lists five cases of scarlet fever. In the previous month, two such cases were noted on the reservation. These cases were the first seen at Red Lake in five years. There has been nothing unusual about these cases except that in two instances there were no pharyngeal symptoms or signs. These two cases did, however, show marked pyoderma lesions which had been present for a week or more before the outbreak of the scarlatinaform rash."

"These cases take on added significance because of the fact that there has been a surprising frequency of acute glomerulonephritis within the last two months. In these two months there have been approximately twenty such cases admitted to the hospital. A great percentage of these cases show marked pyoderma lesions."

"It seems safe to assume that the child population here has been subjected to a wave of streptococcal infection. This is now becoming apparent as scarlet fever, as nephritis, and possibly, as pyoderma."

By August 28, 1953, there had been sixteen cases of scarlet fever and we had, by then, seen

Much of this material was presented to the Staff of the Lutheran Hospital, Bemidji, Minnesota, October 21, 1953.

Dr. Kleinman is Senior Physician of the Red Lake Indian Hospital.

# EPIDEMIC ACUTE GLOMERULONEPHRITIS—KLEINMAN

twenty-four cases of acute glomerulonephritis. On September 10, 1953, the totals stood at twenty-two cases of scarlet fever and thirty-eight cases of nephritis. On October 21, 1953, it was pos-

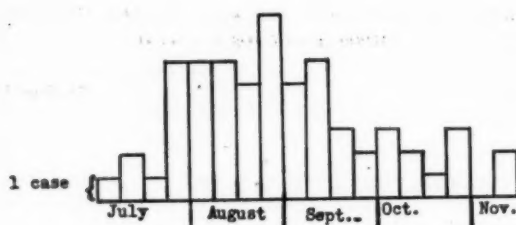


Fig. 1. Week-by-week incidence of glomerulonephritis.

sible to present data on fifty-six cases at a staff meeting of the Lutheran Hospital, Bemidji, Minnesota. The last case, the sixty-third, was seen on November 8, 1953. The week by week incidence of the nephritis cases is shown in Figure 1.

Only children were affected in this outbreak. The youngest was fifteen months old and the oldest was a girl of thirteen years. The most common age groups involved were those in the late pre-school and the early school years. On the basis of this segment of the population at Red Lake, the attack rate comes out to 6.6 per cent. It was common to have two individuals in the same family ill with nephritis at the same time and in one family four siblings were involved.

From the clinical standpoint, these cases were classical.\* Only two patients did not have edema in some form and these two cases were subsiding ones. In eight cases the edema was considered 4 plus and in eleven it was 3 plus. Only five cases did not show evidence of early oliguria while in the hospital and these again were in cases that were considered subsiding.

Hematuria, of course, is the keystone in the diagnosis. In our series this varied from microscopic to frank and gross hematuria. Many of the specimens presented the typical "smoky" appearance.

Hypertension was present in twenty-four (42.5 per cent). In fifteen of these twenty-four, the blood pressure readings were better than 150/100. Hypertension, when it occurred, lasted for about

a week, although there was one case who remained hypertensive for over six weeks.

Heart failure occurred three times, one of the instances being in our single fatal case. We considered a case in heart failure when we noted an increase in pulse rate, pulmonary congestion, and a sudden smooth enlargement of the liver. It was surprising with what rapidity the livers in these cases enlarged. Such patients, too, were noted to be breathless, restless, and preferred to sit up rather than lie down in bed. Anemia of some degree was present in all cases. In ten instances, it was thought wise to transfuse the patients before discharge. All others had enough hemoglobin deficiency to warrant the prescription of iron preparations orally.

Pneumonia occurred in nine instances. The pulmonary infiltration was characteristically lobar in extent and often was bilateral. It is a moot point as to whether these infiltrates were pneumococcal or streptococcal. In any event, they cleared rapidly under penicillin therapy. A good proportion of the children had evidence of lesser respiratory infections such as nasopharyngitis and bronchitis.

Two of the nephritic patients had a complicating infectious hepatitis and four had complicating specific dysentery due to *Shigella Sonnei* I. These complications are not surprising because, since our epidemic last year, sporadic cases of hepatitis have been occurring, and from April on, the reservation has been the site of an epidemic of Shigellosis.

However, the most intriguing feature of all has been the pyoderma. Fully two-thirds of our nephritis cases had associated skin lesions. These lesions were not impetigo nor were they impetiginizations of other skin diseases. They were so definite and characteristic that one could, with ease, look at one case and say, "This is it," and look at another and say, "This is not." By actual count, thirty-seven of the nephritics had accompanying pyoderma. Of these, twenty were more or less generalized and were considered quite severe. They were, in fact, severe enough to warrant hospital admission even in the absence of evidence of glomerulonephritis.

The lesions were characteristically distributed over the lower extremities and the lower half of the trunk. The individual lesion was round, slightly raised, pale red in color, and about five to seven mm. in diameter. These lesions de-

\*The summary of the clinical features is based on the first fifty-six cases. The findings in the last seven cases would not materially alter the overall picture.

veloped a small vesicle which was central in location with respect to the entire lesion but which did not extend over the full area of the raised portion. The crust resulting from the rupture of the vesicle was flat and relatively thin. When seen at a later stage, when secondary infection had set in, the crusts were thicker, more irregular, and covered the entire area of the initial lesion. The initial lesions were well circumscribed and in only several instances was there a widespread complicating cellulitis. Itching, while present, was not a prominent symptom.

Penicillin apparently effected rapid healing in all cases. Some of the oldest lesions now show some evidence of localized de-pigmentation. In a few cases, the pyoderma recurred after the nephritic child was discharged from the hospital. Again, additional penicillin was rapidly effective.\*

Two cases of pyoderma were sent to the University of Minnesota Hospitals for study.\*\* Cultures from the skin lesions of both yielded a non-typeable Group A streptococcus, frequently in pure culture but occasionally with staphylococci. Similar strains of streptococci were isolated from the nose and throat of one of the patients, but not from the other. Cultures of the blood and urine were sterile in both. Neither child developed manifestations of acute glomerulonephritis. Microscopic sections of the skin lesions showed a cellular response which was primarily lymphocytic and eosinophilic rather than neutrophilic. This was somewhat of a surprise although a non-neutrophilic response has been described by Weinstein et al<sup>7</sup> in their studies of experimental streptococcal pneumonia in hamsters. These investigators noted an initial histiocytic response.

The one fatality in the series occurred in a boy of two. Death intervened on the sixth day of illness and on the fourth hospital day. This child was severely ill from the onset. Edema was marked; urinary output was low; and for the last twenty-four hours he was practically anuric. A spreading pneumonia was detected early. Heart failure was evident at least forty-eight hours before death. The autopsy findings were interest-



Fig. 2. (above) K. S., aged six, on admission, showing typical facial edema.

Fig. 3. (center) Skin lesions in varying stages—secondary infection in one lesion below the external malleolus.

Fig. 4. (below) Healed lesions showing characteristic distribution over lower trunk area.

ing but not unusual. There was a general anasarca. The right pleural sac contained a large amount of hemorrhagic fluid. The left pleural sac contained a lesser quantity of a like material. There was a diffuse broncho-pneumonia throughout the middle and right lower lobes. The left upper lobe was practically solid with a pneumonic

\*Dr. Samuel H. Silverman, Senior Assistant Surgeon, United States Public Health Service, assigned to duty at Red Lake was responsible for the clinical management of these cases and I am indebted to him for the data on the clinical features, as well as the treatment.

\*\*Through the courtesy of Dr. Lewis W. Wannamaker.

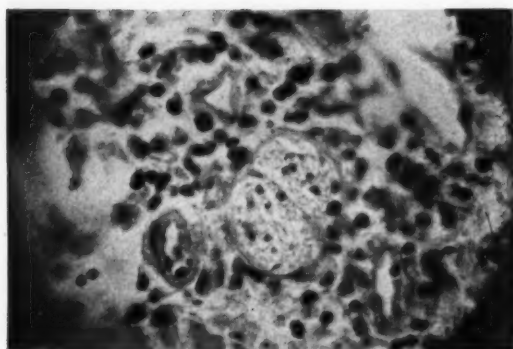


Fig. 5. Section from pyodermatous lesion.

process. The uninfiltated portions of the lungs were edematous. The pericardial sac contained no excess of fluid and the heart appeared to be grossly normal. There was a moderate amount of ascites. The liver was large uniformly and its edge was smooth, rounded and blunt. The cut surface showed intense congestion. The kidneys weighed together 140 grams which is the norm for a six-year-old child. They were pale with a pinkish undertone. Sections, examined later, showed acute proliferative glomerulonephritis. The bladder contained only a smear of bloody sludge.

Mention should be made here, too, of a list of fifteen cases who were labeled suspects. All of these had albuminuria but with no other findings sufficient to justify a diagnosis of nephritis. It is, of course, entirely possible that some of these may have been nephritics in a subsiding phase.

The treatment accorded these patients was along conventional lines. All patients were confined to bed and given 300,000 units of a repository penicillin every other day. The twenty-four hour urinary output was measured each day and blood pressure readings taken every four hours. When the output was adequate, no other treatment was given and no dietary restrictions were imposed. Where the output was low, the diet was restricted to fluid in an amount equal to the basic fluid requirement of the child plus the amount of the urinary output. The fluid chosen was ordinary gingerale. Gingerale was considered good because of its general palatability, its adequate dextrose content, and its low potassium content. We felt, too, that the nitrogen and salt sparing action of the dextrose was a desirable feature.

Special treatment was required for heart failure, hypertension, and anemia. For heart failure, single dose digitalization was used and except in the fatal case, worked well. Magnesium sulphate in 50 per cent solution was used intramuscularly for the control of hypertension and its action was by and large reliable. The routine administration of phenobarbital did not seem to obviate the necessity for using magnesium sulphate. Anemia, when severe, was treated with repeated blood transfusions given at appropriate times and followed by oral ferrous sulphate preparations. Where the child remained oliguric over a period of several days, there was nothing we could do but "sweat it out." When magnesium sulphate was administered to such patients it was done with some temerity and the patient closely watched for evidence of depression.

A detailed epidemiological survey was started on September 11, 1953, by Dr. Cecil R. Reinstein, Epidemic Intelligence Officer of the United States Public Health Service.\* The preliminary survey was completed by September 23, and consisted of the following items:

1. Obtaining clinical data on all cases of nephritis.
2. Obtaining nose and throat cultures on all such cases.
3. Obtaining contact data from all known contacts, familial, and otherwise.
4. Obtaining nose and throat cultures from all contacts.
5. Obtaining, where possible, cultures from the pyodermatous lesions.
6. Drawing blood for anti-streptolysin titre from a substantial number of nephritis cases and some contacts.

As controls, some seventy-five first and second grade children in the Red Lake Schools were similarly cultured. None of these children had had scarlet fever, nephritis, or pyoderma. A slightly larger control group was also cultured in the Cass Lake Area. This is a community fifty miles from Red Lake and its school population is mixed Indian and non-Indian.

\*Dr. Reinstein also headed the teams which came to the reservation later to help conduct the mass prophylaxis program. The bacteriological work was under the direction of Dr. Elaine L. Updyke, Head of the Streptococcus Laboratories of the United States Public Health Service at Chamblee, Georgia.



# EPIDEMIC ACUTE GLOMERULONEPHRITIS—KLEINMAN

TABLE I.

	Positive for Beta Hemolytic Strep.		Group A	
	No.	Per cent	No.	Per cent
42 Cases	11	26	9	21
109 Contacts	22	20	9	83
19 Suspects	12	63	10	53
43 Red Lake controls (First Grade)	13	30	3	6

All of the facts contained in the epidemiological data have not yet been sorted and appraised. This is also true of the bacteriological work. Both of these phases will be the subject of future papers. However, several sets of culture results are now available. Table I shows the results of cultures taken at the time of the preliminary survey.

Beta hemolytic streptococci were recovered from the pyoderma lesions in sixteen instances, often in pure culture.

On the basis of the bacteriological data obtained at the time of the preliminary epidemiological survey, a program of mass prophylaxis was projected and carried out. The treatment consisted of a single injection of dibenzyl ethylendiamino di Penicillin G.\* The dose for individuals over fifteen years of age was 1,200,000 units while those younger than fifteen years received half that amount. The injections were started on October 5, 1953, and when they were completed five days later, 1,997 persons had been treated. This number represented 70.25 per cent of the total available population.

At the time of the treatment, nose and throat cultures were taken on every fourth individual. Care was taken to have this sample random and representative. Three weeks later, during the first week of November, 1953, cultures were again taken to appraise the efficacy of the prophylaxis program. It was possible, in November, to reculture 381 individuals who had been first cultured in October. It is the results of these 381 "before" and "after" cultures that are shown in Tables II and III.

The five positives listed in Table III were not positive at the time of the mass prophylaxis program. All those who were positive at that particular time were negative on reculture three weeks later.

The culture data shown in Tables I and II indicate a high rate of streptococcus recovery in

\*Supplied by Wyeth, Inc., Philadelphia, Pa.

TABLE II.  
POSITIVE CULTURES FOR BETA HEMOLYTIC STREPTOCOCCI BEFORE TREATMENT

Group A				Group C	Group G	Total
Not typeable	Type 12	Type 4	Other			
41	3	10	4	17	4	79

Per cent positive for beta hemolytic streptococci . . . 20.73  
Per cent positive for Group A, not typed . . . 10.76

TABLE III. POSITIVE CULTURES FOR BETA HEMOLYTIC STREPTOCOCCI AFTER TREATMENT

Group A—not typeable 1	Other Groups 4
---------------------------	-------------------

Per cent positive for beta hemolytic streptococci . . . 1.31  
Per cent positive for Group A, not typed . . . 10.76

the general population at Red Lake, as well as in the nephritis cases, the contacts, and the suspects. The data in Table III show that, within three weeks after the prophylaxis program, the organisms had all but disappeared. A most interesting feature of the results was the inability of the laboratory (except in a few instances) to type these organisms against any of the known antisera.

Rammelkamp et al<sup>3,4</sup> have pointed out that acute glomerulonephritis is especially likely to follow infection with Type 12 streptococci. Reed<sup>5</sup> considered Type 12 streptococci responsible for the cases of nephritis which he reported. While the Red Lake strains remain as yet unidentified, there is little reason to doubt their nephritogenic properties.

No new cases of acute glomerulonephritis have been seen at Red Lake since November 8, 1953. Nor have there been any instances of the typical pyoderma.

## Acknowledgment

The author wishes to express his gratitude to Dr. A. J. Chesley, Secretary and Executive Officer of the Minnesota State Department of Health, and to those persons at Red Lake who helped to organize and execute the mass prophylaxis program.

## Summary

1. An epidemic of acute glomerulonephritis is described as it occurred in an Indian community of approximately 3,000 persons.

(Continued on Page 489)

## SUBDURAL HEMATOMAS

WINCHELL McK. CRAIG, M.D.

and

ROSS H. MILLER, M.D.

Rochester, Minnesota

**A**LTHOUGH subdural hematomas are not rare, they frequently are difficult to distinguish from intracranial tumors. In cases of this disease, the symptoms and results of examination may simulate those in cases of such diseases as cerebral arteriosclerosis, chronic encephalitis and posttraumatic syndrome.

For some time we have been interested in analyzing a series of cases to discern, if possible, any diagnostic leads, criteria for operation and methods of improving postoperative treatment. In spite of the optimism which prevails with regard to the prognosis in cases of subdural hematoma in which operation is performed, the mortality rate is greater than one is led to believe.

### Material

This report is based on a review of the clinical histories in 163 cases of acute or chronic subdural hematoma in which operation was performed at the Mayo Clinic. An extradural or intracerebral hematoma was not associated with the subdural hematoma in any of these cases.

### Age and Sex of Patients

Subdural hematomas may occur at any age. Although they have been said to occur most frequently among infants and elderly persons, none of the patients in the 163 cases was less than fifteen years of age. In forty-three (26.4 per cent) of the cases, the patients were between sixty and sixty-nine years of age (Table I). One hundred and forty-seven of the patients were men and sixteen were women.

### Signs and Symptoms

The clinical history revealed that a mild or severe injury of the head had occurred in 132 (81 per cent) of the 163 cases. An interval of three to five months usually had elapsed between the time of the injury and the occurrence of symptoms. In seventy-three cases (44.8 per cent)

the patients had been unconscious for five minutes to three days immediately after the injury. A definite lucid interval had occurred in nineteen (11.7 per cent) of the cases.

TABLE I. AGE AND SEX OF PATIENTS

Age, years	Patients		
	Number	Males	Females
15 to 19	9	8	1
20 to 29	12	12	—
30 to 39	35	28	7
40 to 49	24	22	2
50 to 59	32	30	2
60 to 69	43	41	2
70 or more	8	6	2
Total	163	147	16

Symptoms of a subdural hematoma are caused by increased intracranial pressure, local pressure on the brain and meningeal irritation. The symptoms which caused the patients to consult a physician were as follows: headache in 137 cases (84 per cent); disturbances of cerebral function (coma, drowsiness and psychosis) in 106 cases (65 per cent); weakness of one or both sides of the body in ninety-two cases (56.4 per cent) and visual disturbances in fifty-two cases (31.9 per cent).

Chronic papilledema was present in fifty-three (32.5 per cent) of the cases. The papilledema usually was of 1 or 2 diopters, but it was of 6 diopters in one case in which the patient was thirty-two years of age. Although acute subdural hematomas frequently produce hemorrhage around the margins of the optic disks, such hemorrhage was present in only a small number of the cases in this series.

Examination disclosed a homonymous defect of the visual fields in nine (5.5 per cent) of the 163 cases. In six of the nine cases, the subdural hematoma was contralateral to the homonymous defect; in the three remaining cases, it was ipsilateral. In these three cases, it is probable that herniation of the temporal lobe occurred into the incisura tentorii and caused a shift of the brain stem and pressure on the opposite posterior cerebral artery which produced ischemia of the

Dr. Craig and Dr. Miller are from the Section of Neurologic surgery of the Mayo Clinic and Mayo Foundation. The Mayo Foundation is a part of the Graduate School of the University of Minnesota.



optic radiation opposite to the subdural hematoma.<sup>7</sup>

In thirty (18.4 per cent) of the cases, impairment of function of the oculomotor nerve was evidenced by a dilated, sluggish or unresponsive pupil, by ptosis, or by dysfunction of the ocular muscles supplied by this nerve. Paralysis of the trochlear nerve was present in three cases (1.8 per cent), paralysis of the trigeminal nerve in one case (0.6 per cent), paralysis of the abducens nerve in two cases (1.2 per cent) and paralysis of the facial nerve in twenty-five cases (15.3 per cent). According to Oldberg,<sup>12</sup> a central type of paralysis of the facial nerve occurs commonly in cases of subdural hematoma.

Convulsions occurred in sixteen (9.8 per cent) of the cases. The convulsions were slightly more common in cases in which the patients were in the third or fifth decade of life than they were in cases in which the patients were in the other age groups. They were of the jacksonian type in ten of the sixteen cases and were generalized in the nine remaining cases. In the ten cases in which the convulsions were of the jacksonian type, they occurred on the side contralateral to the subdural hematoma. The generalized convulsions did not have a tendency to occur predominantly on either side. The occurrence of convulsions did not necessarily indicate that the patients' condition was deteriorating rapidly, as mentioned by other authors.

Electro-encephalography was used in eighty-one (49.7 per cent) of the 163 cases, and it revealed evidence of an intracranial disorder in seventy-six of the eighty-one cases. The most frequent electro-encephalographic abnormality was a delta rhythm. This occurred over the site of the lesion in forty-five cases, on the opposite side in ten cases, bilaterally in seventeen cases and over the entire brain area in four cases. Marsh, Hjartarson and Courville<sup>8</sup> said that subdural hematomas commonly produce a suppression of the alpha activity. They expressed the opinion that this is due to depression of the pacemaker in the parieto-occipital area. They also said that posterior lesions are more likely to affect the pacemaker than are anterior lesions. Dislocation and distortion of the brain may be the cause of bilateral or contralateral dysrhythmia.

Roentgenographic examination disclosed evidence of fracture of the skull in thirty (18.4 per cent) of the 163 cases. A shift of the pineal body

was apparent in twenty-two cases (13.5 per cent). Oldberg<sup>12</sup> and Engeset<sup>4</sup> said that a shift of the pineal body is caused more commonly by a subdural hematoma than it is by any other intracranial mass.

Because of a tentative diagnosis of tumor of the brain, pneumoencephalography was performed in forty-three (26.4 per cent) of the cases. It revealed a shift of the ventricular system away from the lesion in forty-two cases. In the remaining case, the pneumoencephalogram was unsatisfactory. In ten cases, this diagnostic procedure did not reveal any air in the subarachnoid space over the cortex involved by the subdural hematoma.

Other roentgenographic findings included calcification in the membrane of the subdural hematoma in one case, thinning of the skull over the site of the hematoma in two cases and thickening of the skull over the site of the lesion in one case. Erosion of the skull by a subdural hematoma has been reported by Engeset.<sup>4</sup>

The hematoma was situated on the right side in seventy-three cases (44.7 per cent) and on the left side in fifty-eight cases (35.5 per cent). In thirty-one cases (19 per cent), a hematoma was found on each side. In one case the hematoma was situated in the posterior fossa. In this case, ventriculography revealed symmetrical dilatation of the ventricles, and an exploratory operation disclosed a large subdural hematoma in the posterior fossa. The patient made an uneventful recovery.

### Surgical Treatment

The primary objective of the surgical treatment of subdural hematoma is evacuation of the hematoma to allow the compressed brain to expand beneath the clot.

Two hundred and two operations were performed in the entire group of 163 cases. In forty-five of the 163 cases, the initial exploratory operation was a craniotomy with turning back of a bone flap; in the 118 remaining cases, the initial operation was performed by making holes in the skull with a burr. A second exploratory operation was performed in sixteen of the forty-five cases in which the initial operation was a craniotomy. In these sixteen cases, the bone flap created by the previous craniotomy was turned back in order to remove the membrane of the hematoma and the blood that had collected.

A second exploratory operation also was performed in twenty-three of the 118 cases in which the initial operation was performed by making a hole in the skull with a burr. In fourteen of these twenty-three cases, the holes previously made with a burr were reopened. A craniotomy was performed in the nine remaining cases.

A craniotomy should be performed in all cases in which the membrane continues to fill with fluid after trephination, and in cases in which the clot is solid and cannot be removed by suction through a small opening.

### Postoperative Treatment

Postoperative treatment should be started as soon as the diagnosis is established at operation. As soon as the hematoma has been evacuated, intravenous administration of isotonic solution of sodium chloride should be started to encourage an increase in the intracranial contents to fill the space previously occupied by the hematoma. The intrathecal injection of this solution also has proved effective. Blood transfusions should be used when indicated. The intravenous administration of vitamin K occasionally may help to control troublesome hemorrhagic oozing from the membrane of the hematoma.

Cerebral edema may occur and become so severe as to cause herniation of the temporal lobe into the incisura tentorii with resultant compression of the brain stem, hemorrhage and death.<sup>7</sup> The treatment of this complication includes limitation of the fluid intake, administration of 1 ounce (30 gm.) of magnesium sulfate once a day and elevation of the patient's head. Many therapeutic agents have been administered intravenously in an attempt to relieve this complication. These include serum albumin, whole blood, a 20 per cent aqueous solution of dextran and a 50 per cent solution of sucrose. All of these agents appear to be effective in some cases but their place in the treatment of cerebral edema remains to be established. The intravenous administration of 7½ grains (0.5 gm.) of caffeine and sodium benzoate four times a day and the oral administration of small doses of amphetamine sulfate at similar intervals seem to aid in combating the cerebral edema in some cases.

Postoperative treatment is difficult in cases in which the patients are comatose. It includes the maintenance of an adequate airway by means of a laryngeal or tracheotomy tube, the use of an in-

dwelling urethral catheter and adequate care of the skin to prevent decubital ulcers.

### Results

In ninety-eight (60.1 per cent) of the 163 cases, the convalescence was uneventful, and the patients remained in the hospital for seven to twenty days after operation. Twenty-four (14.7 per cent) of the 163 patients died after the operation. They seemed to respond satisfactorily for the first or second day, but they became comatose and died on the fourth or fifth day after the operation.

In thirty-two (19.6 per cent) of the cases, postoperative examination revealed a neurologic or mental deficit of 10 to 20 per cent. The patients in these cases were evenly distributed throughout the various age groups. It is well known, however, that the surgical risk is higher and the results of operation are less satisfactory in cases in which the patients are elderly persons.

Generalized convulsions occurred postoperatively in eight (4.9 per cent) of the 163 cases, and the anticonvulsants were required for their control. In six cases (3.7 per cent), the patients complained of such symptoms as dizziness, headache, fatigue and photophobia, which occur commonly in cases of postconcussion syndrome.

Craniotomy was performed in seventeen of the twenty-four cases in which the patients died postoperatively. In eight of the seventeen cases, the craniotomy was performed initially, and the blood clot and the membrane of the hematoma were removed. In two of the eight cases, a recurrence of the symptoms necessitated a second exploratory operation which was performed by turning back the bone flap created by the initial craniotomy. Craniotomy was performed one to five days after initial exploration with a burr in nine of the seventeen cases. In seven of the twenty-four cases, the only surgical procedure consisted of opening the skull with a burr and draining the hematoma. Table II shows the postmortem findings in eighteen of the twenty-four cases in which death occurred.

In cases in which intrapontine hemorrhage and infarcts were associated with the subdural hematoma, the patients did not respond satisfactorily after the operation. Spasms of the extensor muscles of the lower extremities developed, Babinski's reflex could be elicited bi-

# SUBDURAL HEMATOMAS—CRAIG AND MILLER

laterally and the patients died within four days after the operation.

## Comment

There has been much debate concerning the true nature of subdural hematomas. It is well known that some hematomas are the result of rupture of the communicating vessels between the cortex of the brain and the dural sinuses, as has been reported by numerous authors. On the other hand, several authors have demonstrated that a subdural hematoma can be an intradural lesion and can be caused by hemorrhage between the dural layers, the inner layer of the dura acting as the inner membrane of the lesion<sup>6</sup>.

In many cases, severe injury of the head will not be followed by subdural hematoma as the brain will undergo swelling immediately after the injury. Because of the finding of laminated, solid blood clots in a subdural hematoma, one of us (Craig<sup>3</sup>) has suggested that recurrent bleeding may occur in a hematoma. Munro and Merritt<sup>10</sup>, Gardner<sup>5</sup>, Zollinger and Gross<sup>15</sup> have expressed the opinion that the increase in size of a subdural hematoma may be due to the development of fluid, within the subdural membrane, which is high in protein content and is caused by the breakdown of the erythrocytes in the hematoma, which produces a body of fluid surrounded by a semi-permeable membrane which has the ability to draw fluid into the sac by osmotic pressure. This drawing of the fluid into the sac by osmotic pressure has been said to be the cause of the fluctuation of the symptoms commonly present in cases of subdural hematoma.

In three of the cases, the patients attributed their symptoms to a lumbar puncture which had been performed previously. It is assumed that the lumbar puncture disturbed the balance between the brain and the hematoma and thus produced signs of increased intracranial pressure. In two of the three cases, operation had been performed with spinal anesthesia two and three months, respectively, before the onset of the symptoms of the subdural hematoma. Lumbar puncture had been performed one day before the onset of coma in the remaining case. In this case, it must be assumed that the progression of symptoms might be attributable to herniation of the cerebellar tonsils into the foramen magnum

TABLE II. POSTMORTEM FINDINGS IN EIGHTEEN CASES OF SUBDURAL HEMATOMA

Lesion	Cases
Cerebral Edema	12
Compression and Distortion of Brain	2
Cortical and Subcortical Hemorrhage	9
Infarction of Cerebral Hemisphere	8
Degeneration of Brain	3
Pontine Hemorrhage	5
Infarction of Pons	3
Infarction of Cerebellum	1
Degeneration of Pyramidal Tracts	1
Subarachnoid Hemorrhage	1
Meningitis	2
Contusion of Brain	4
Laceration of Brain	3

or herniation of the hippocampal gyrus of the temporal lobe into the tentorial notch as a result of the lumbar puncture.

Cooney and Baker<sup>2</sup> recently reported a case in which a subdural hematoma developed after the removal of a large tumor from the lumbar segment of the spinal cord. These authors expressed the opinion that a large reservoir of cerebrospinal fluid was maintained in the area formerly occupied by the solid tumor, and, as the fluid left the subarachnoid space and ventricles, the brain was distorted and a surface vessel was torn, thus allowing the blood to accumulate in the subdural space. Bucy<sup>1</sup> reported a case in which a subdural hematoma developed after pneumoencephalography.

It is interesting that mental defects occurred in a rather large number of the cases. In these cases, the clinical manifestations indicated the presence of an organic lesion rather than neurasthenia.

Angiography produces a rather characteristic roentgenographic picture in cases of subdural hematomas. Engeset<sup>4</sup> reported that the angiograms of fourteen of twenty-one patients with subdural hematoma revealed a characteristic avascular area between the skull and the compressed part of the brain. An extradural hematoma is difficult to distinguish from a subdural lesion unless the sagittal sinus is shown to be displaced inferiorly by the extradural hematoma.

There are two schools of thought concerning the initial surgical treatment of subdural hematoma. Many surgeons prefer to make bilateral openings in the skull with a trephine, drain the hematoma, and allow the brain to regain its normal position in relation to the skull, thus obliterating the space occupied previously by the hematoma. Others prefer to perform a craniotomy initially and remove the clot and the membrane of the hematoma. Both of these procedures have

their advantages. In some cases, the surgical risk is poor because of the general physical condition of the patients. In such cases, trephination and relief of the existing pressure may be the treatment of choice. If the hematoma is so solid that it cannot be evacuated through openings made with a trephine, or if the membrane of the hematoma refills after trephination, craniotomy is definitely indicated. In some cases, the mere presence of the membrane of the hematoma is sufficient to prevent the brain from expanding to its normal position. In these cases, the membrane should be removed by means of a craniotomy. Since subdural hematomas occur bilaterally in 20 to 30 per cent of all cases of this lesion, it is imperative that openings be made on both sides of the skull. The incidence of bilateral subdural hematomas is much higher than this in cases in which the patients are children.

It is discouraging that a second exploratory operation was necessary in thirty-nine (23.9 per cent) of the 163 cases. It is well known that craniotomy is difficult to perform in many cases of subdural hematoma owing to the extreme vascularity of the scalp, bone, dura and subdural membrane, and the resultant hemorrhage at the time of operation. The membrane of the hematoma left behind may be the site of subsequent hemorrhage, or it may, as some authors believe, secrete fluid and cause further compression of the brain. In some cases, the mere presence of the membrane may prevent the compressed brain from expanding and obliterating the space previously occupied by the subdural hematoma.

The convalescence is complicated in many cases. In twenty-four of the 163 cases, the patients died within four days after the operation. Since arteriosclerosis was present in several of these cases, the prognosis was poor. Vascular lesions of the pons commonly are associated with subdural hematoma. In any case of an expanding intracranial mass, herniation of the temporal lobe is likely to occur into the incisura tentorii and produce pressure on the brain stem and subsequent hemorrhage in the mid-brain and pons. According to Schwarz and Rosner,<sup>13</sup> necropsy disclosed herniation of the hippocampal gyrus through the incisura tentorii in 83 per cent of a series of cases of expanding supratentorial lesions. Moore and Stern,<sup>9</sup> Van Gehuchten<sup>14</sup> and Nelson<sup>11</sup> have reported cases in which vascular lesions of the brain stem

and occipital lobe were associated with a tumor of the brain.

In one case in which a large subdural hematoma was removed from over the right frontoparietal area by means of a right transfrontal craniotomy, diabetes insipidus, hemiplegia and convulsions developed postoperatively, and electro-encephalography disclosed severe injury of the brain at the site previously occupied by the hematoma. The patient in this case was thirty-eight years old. It is assumed that the diabetes insipidus was caused by vascular lesions of the hypothalamus.

### Summary

This report is based on a review of 163 cases of subdural hematoma, observed at the Mayo Clinic. The ages of the patients ranged from fifteen to eighty-eight years. One hundred and forty-seven of the patients were men and sixteen were women. There was a history of a mild or severe injury of the head in 132 cases. The hematoma was situated on the right side in seventy-three cases and on the left side in fifty-eight cases. In thirty-one cases, a hematoma was found on each side. In one case, the hematoma was situated in the posterior fossa.

The chief symptoms were as follows: headache in 137 cases; coma, drowsiness or psychosis in 106 cases; weakness of one or both sides of the body in ninety-two cases, and visual disturbances in fifty-two cases. Convulsions occurred in sixteen cases. Electro-encephalography was used in eighty-one cases, and it revealed evidence of an intracranial disorder in seventy-six of the eighty-one cases. Pneumoencephalography was used in forty-three cases, and it revealed a shift of the ventricular system away from the lesion in forty-two of the forty-three cases.

Two hundred and two operations were performed in the entire group of 163 cases. In forty-five cases, the initial operation was a craniotomy; in the 118 remaining cases it was performed with a burr. A second exploratory operation was necessary in thirty-nine of the 163 cases.

In twenty-four cases, the patients died within four days after the operation. The convalescence was uneventful in ninety-eight cases. In thirty-two of the 163 cases, postoperative examination revealed a neurologic or mental deficit of 10 to 20 per cent.



The primary objective of the surgical treatment of subdural hematoma is evacuation of the hematoma to allow the compressed brain to expand beneath the clot. This may be accomplished by craniotomy or trephination. If the hematoma is so solid that it cannot be evacuated through openings made with a trephine, or if the membrane of the hematoma refills after trephination, craniotomy should be performed. Since subdural hematomas occur bilaterally in 20 to 30 per cent of all cases of this lesion, an opening should be made on each side of the skull.

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## EPIDEMIC ACUTE GLOMERULONEPHRITIS AT RED LAKE

(Continued from Page 483)

2. There were a total of sixty-three cases observed, in children only. The common age groups attacked were the late pre-school and the early school age groups.

3. Clinically, the cases were classical.

4. There was one fatality.

5. A characteristic pyoderma was observed in association with the nephritis in two-thirds of the cases.

6. A Group A non-typeable beta hemolytic streptococcus was isolated from nose and throat cultures in a substantial percentage of cases, contacts, as well as from a representative segment of the general population.

7. A similar organism was isolated from many of the skin lesions.

8. A mass prophylaxis program using a long acting penicillin preparation succeeded in prac-

tically obliterating the streptococcus within a three-week period.

9. The occurrence of nephritis was likewise abruptly terminated within the same period.

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## ETHER FLUSH TREATMENT OF RETAINED POSTOPERATIVE COMMON DUCT STONES

### A Local Survey

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SINCE disparate opinions on the usefulness of solvent or Pribram type of common bile duct flushes vary from complete rejection to what might appear to be over-enthusiasm, we have conducted a survey of local surgeons who have had experience with this technique. Such an evaluation has suggested that within certain limitations, provided certain essential basic principles have been followed, T-tube flushing is a very useful tool in the treatment of retained common duct stones.

Operative management is all too often incomplete. Pribram<sup>22</sup> states that 16 to 25 per cent of operations for choledocholithiasis are followed by retained stones. Best<sup>5</sup> and Hicken<sup>15</sup> estimate that about 7 per cent of patients with gallstones also have liver stones. The presence of stones high in the hepatic radicles at the time of operation and their subsequent downward migration, as a result of more free flow of bile after operative removal of the common duct stones, no doubt explains in many cases the surprising appearance of stones within the common duct on the postoperative cholangiogram.

### Composition of Gallstones

Soft bilirubin stones or mud may collect in the common duct in the presence of partial obstruction and infection. Phemister<sup>21</sup> has found that these soft stones contain no calcium carbonate. Stones originating from the gallbladder usually contain calcium carbonate deposited in rings about cholesterol, protein and bile salts.<sup>21,28,31</sup>

Retained common duct stones have the same composition as the gallbladder stones and therefore the operative specimen stones should be tested in a bottle of ether to obtain an index of their solubility before flushing the duct. Since cholesterol rapidly saturates a small amount of ether, this test should be made on at least one-half an ounce of ether.

Well over 90 per cent of stones will dissolve

rapidly in ether.<sup>7,27</sup> Doubt as to the accuracy of this statement has been raised by investigators who have tested hardened, dry or formalin-fixed stones. A chemical explanation has not been advanced but the marked difference in solubility between fresh and aged stones appears to be a correct observation as we have been able to demonstrate on many occasions.

### Gallstone Solvents

Although many different solvents have been tried,<sup>7,10,13,27,30</sup> pure ethyl ether or warm chloroform are by far the best from the standpoint of solvent action.

Ether was the original and subsequently the most widely used solvent. In 1891 Walker<sup>29</sup> reported the dissolution of a gallbladder stone by the injection of ether into a sinus tract.

Chloroform is a somewhat better solvent than ether, but some chance of liver damage from chloroform may exist. It would seem reasonable to be concerned over the likelihood of absorption by liver cells adjacent to the hepatic ducts of a substance known to be as strong a hepatotoxin as chloroform. Damage might be even more likely in a liver recovering from duct obstruction. Narat and Cipolla<sup>20</sup> first reported the use of chloroform at operation to soften an impacted stone. More recently Best<sup>7</sup> has substituted chloroform as a common bile duct flush at intervals during the periods of ether flushes. Our experience consists of three chloroform flushes on only one patient. In each instance considerable pain lasted about one hour whereas ether in the same patient did not cause pain. Information on another patient in this vicinity related the same type of pain in spite of the use of nupercaine. This patient also developed a temporary three-plus cephalin flocculation.

Although Best<sup>7</sup> did not find liver damage, further investigation into the possible hepatotoxic effects would seem indicated before extensive



use of chloroform is undertaken particularly since ether, a safe solution, is quite effective.

### Mode of Action of Common Duct Flushes

Even though ether is a proven stone solvent *in vitro*, a natural question arises as to its mode of

Ether boils at body temperature. One cc. of ether will evaporate to 222.1 cc. at 38° C. at 760 mm. Hg pressure.<sup>26</sup>

Bergh<sup>3</sup> has shown that elevation of duct pressure will induce sphincter spasm, and Howell<sup>16</sup> had demonstrated an elevation of serum amylase



Fig. 1. These two cholangiograms were taken eighty-four days apart. They represent the initial picture of one large stone in the distal common duct and the final clear duct. This patient had already had two operations for removal of common duct stones. In each instance a clear operative cholangiogram was obtained, indicating that the stones had descended from the hepatic ducts.

action within the common bile duct. That stones are cleared from the duct is easily established by eventual clear cholangiograms in a high percentage of cases subjected to ether flushes. Best<sup>7</sup> recently cited 80 per cent success; and this series has an 85 per cent successful end result, in cases treated at least half of the average required time. Some authors<sup>18,30,32</sup> believe that expulsion is the main mode of action and no doubt stones do pass spontaneously in some cases that are being flushed; however, three cases in this series show definite x-ray evidence of progressive decrease in stone size as the flush progresses. Figure 3 demonstrates this point.

The greater danger from the use of ether results from rapid elevation of intraductal pressure.

following pancreatic duct filling during cholangiography. Aside from a study involving injection of relatively huge amounts of ether into a dog's gallbladder and permitting it to remain long periods,<sup>23</sup> there has been no experimental or clinical evidence of damaging effects from ether flushes done over a period of many months,<sup>8,26,27</sup> providing undue pressure is not allowed to develop.

### Results from Common Duct Flushing

Pribram, who first reported common bile duct ether flushes in 1935,<sup>22</sup> has reported fifty-one cases with almost uniform success.<sup>23,24</sup> Others have described various modifications and varying degrees of success.<sup>1,6,9,11,18,19,25,26,27,30</sup>

A double catheter<sup>24,26</sup> or a two-way T-tube<sup>1,6,17</sup> are ideal for flushing the common duct. When the ordinary T-tube is used, the problem of providing a vent is best resolved by injecting the ether into a polyethylene tube of small bore which has previously been inserted down the T-tube to the cross-arm of the T-tube. By this device the ether vapor may escape freely through the T-tube by flowing around the polyethylene tube. The double catheter method removes the danger of increased intraductal pressure and therefore makes the procedure safe in the hands of the patient or any lay person.

Cost and time involved make it necessary that lay persons perform the flushes.

A scrutiny of the reported failures in the literature,<sup>2,11,13,15</sup> and of the cases done locally indicates that the main cause of failure is a lack of persistence. The average time required for success was forty-seven days. It then becomes obvious that if the flush technique is to be attempted at all, one must plan on doing it regularly—daily or more often—for a minimum of two months. A failure reported in less time is not a fair evaluation of the method; no more than, for example, one would be justified in treating a toxic goiter medically for a week or two and abandoning treatment as a failure at the end of so short a period.

We do not believe that one should abandon the flushes under a minimum of two months because of a lack of evidence of decreasing size since a stone which is gradually softened by the ether may collapse, fragment and pass rather suddenly. Most of the follow-up cholangiograms at two-week intervals do fail to show a decrease in stone size, but suddenly at the final two-week cholangiogram the duct is clear. Some surgeons have reported removing the T-tube in spite of small stones and without subsequent trouble. If one were to rely only upon spontaneous passage of the stone, it would seem better to clamp the T-tube until the stone passed since the risk of partial duct obstruction, build-up of bilirubin salts, and the danger of cholangitis and infection can manifest trouble even a few years later.

#### Intraductal Anesthesia

A topical anesthetic solution is an important adjunct to the ether flush technique. Any foreign agent is likely to induce sphincter spasm. In a few cases with elevated sphincter resistance tests

the intraductal injection of Nupercaine has been followed by a significant drop in resistance. It is assumed that the stimuli of irritation and of duct distention are blocked by topical anesthesia. This effects a negative or minimal distress to the patient and the advantage of an open sphincter to allow debris or stone fragments to flow into the duodenum.

Nupercaine 1:500 was first proposed by Harris and Marcus<sup>14</sup> in 1946 as the anesthetic agent for sphincter relaxation as an aid to stone passage without ether flushes. Glenn and Hill<sup>12</sup> later employed 1.5 per cent Metycaine for the same purpose. Finally, the benefits of topical anesthesia were combined with the ether flush.<sup>7,27</sup>

Additional benefit may result from the simultaneous use of the Best<sup>4</sup> type physiologic flush composed of antispasmodic drugs and cholegogues.

#### Recommended Technique

Check the solubility of the patient's fresh gall-bladder stones in one ounce or more of ether.

1. Aspirate bile from the duct and T-tube.
2. Inject 10-20 cc. of 1:500 Nupercaine. (Quantity is dependent upon the size of the duct and the degree of ampullary obstruction.)
3. Clamp T-tube for twenty minutes.
4. Aspirate T-tube.
5. Insert intravenous type polyethylene tubing down T-tube at least as far as cross arm of T within common duct. Number 19 gauge I.V. needle is then inserted into the outer end of PE tube.
6. Inject slowly 5-10 cc. of pure ethyl ether. Do not compress T-tube or impede free back flow of ether vapor.
7. Allow open T tube drainage for twenty to thirty minutes after flush.
8. If tolerated, clamp T tube until next flush.
9. Flush two to four times daily. The patient or other lay person may safely perform the procedure after instruction.
10. Cholangiogram at two week intervals.

The key points in safe and effective use of ether are:

- a. Avoidance of pressure.
- b. Topical anesthesia.
- c. Persistence.



Fig. 2. Four separate patients who were successfully treated by ether flushes. This group represents varied situations: (a) one stone located at the hepatic side of the T tube, (b) three stones located at the duodenal side below the T tube, (c) three stones in the upper arm of the common duct, (d) one stone at the mid point of the T tube. Clearance time was 43, 19, 13, 26 days respectively.

#### Local Survey of Results

A canvas of the surgeons in and about Minneapolis indicates a high success ratio when a study of their cases revealed conscientious persistence.

Four reported failures were not included in the total survey because flushes were not carried out at least once daily for three weeks. This exclusion seems justified since the attempt is hardly



Fig. 3 represents a span of 157 days. Although the patient and surgeon finally decided upon reoperation, at that time the stone had decreased in size from 1.5 cm. to 0.75 cm. and was found to be quite mushy and soft at operation. This case exhibits reasonable evidence of the solvent action of the ether flushes.

sincere, nor is a just evaluation of the procedure obtained from a one or two week trial when the average time required in successful cases was forty-seven days.

Twelve surgeons produced twenty-six cases of reasonable trial with twenty-two successful cases and four failures (85 per cent success).

#### Results of Successful Cases (85 Per Cent)

Average time (22 cases)	47.1 days
Range	12 to 197 days
Clear in one month or less	9 cases
Requiring over 2 months to clear	3 cases
Size of stones	1 cm. or less
Complete obstruction	1 case
Stones above proximal or hepatic limb of T tube	2 cases
More than one stone	12 cases

#### Evaluation of Failures (15 Per Cent)

Average time before abandonment of flush 103 days.

One case flushed once daily for 119 days without success. (Gallbladder stones did not dissolve in ether bottle prior to flush and therefore should not actually have been tried.) One case developed

a choledochoduodenal fistula as a result of an attempt to pass a ureteral catheter down the distal limb of the T tube (107 days). One case with a 1.5 cm. stone reduced to half its original size by four times daily flushes for 157 days. At reoperation a soft mushy stone was extracted. One case of a stone above the T tube was flushed for twenty-eight days and the T tube then was taken out with a current report of no symptoms at eighteen months. This group does not include four more cases of reported failures in which flushes were done less than three weeks.

The following case study exemplifies the features described within the body of this paper.

#### Case Report

This fifty-one-year-old moderately obese white woman was admitted to the hospital on June 12, 1952, with a twelve year history of mild, recurrent attacks of upper abdominal pain and a two week history of jaundice.

A G.I. series was suggestive of an active duodenal ulcer. The serum bilirubin was 2.2 mgm. per cent; the blood amylase was normal at 51 mgm. per cent; the urine was positive for bile and the hemograms were essentially normal.



Fig. 4. Beginning with a total obstruction, this case became clear in twenty-three days of ether flushes done twice daily. Although a total obstruction was present, stones could not be separately visualized until one week later, suggesting that in addition to stones and debris obstructing the ampulla, it is likely that more stones migrated downward from the liver. In this instance two catheters were used, one of which was inserted in through the proximal arm of the common duct and the other through the cystic duct.





Fig. 5. A cholangiogram revealing at least two common duct stones lying just proximal to the uppermost limb of the T-tube.

A cholecystectomy, choledochotomy and appendectomy were performed on June 16. The gallbladder was contracted and contained stones. The common duct was markedly dilated and thickened. Twelve stones (0.7-1.5 cm. in diameter) were removed from the main hepatic and the main hepatic bile ducts, and five stones were extracted from the right hepatic duct. A cholangiogram was performed through the T-tube on the operating table and this was interpreted and later reported as normal.

Immediately after the operation several of the stones were placed in ether. Gentle agitation of the container readily fragmented the stones.

The patient's postoperative course was uneventful and on her discharge date of June 26, a cholangiogram (Fig. 5) revealed at least two common duct stones lying just proximal to the uppermost limb of the T-tube.

On June 27, 28, and 29, the patient was instructed as to the performance of the above technique (in this case ether-alcohol solution was used and this was injected only once daily into the T-tube). The patient performed the flushes once a day and at no time did she complain of pain. On several occasions transient nausea was noted.

Recheck cholangiograms on August 8, revealed two calculi in the common duct and two calculi in the hepatic ducts. Re-examination on October 17, showed a filling defect in the distal portion of the common duct and one in the hepatic radicle. However, the distal stone was smaller and thus the flushes were continued. On Janu-

ary 4 the patient experienced a transitory attack of upper abdominal pain with radiation into her back which was suggestive of common duct colic. On January 8, a cholangiogram showed the common and hepatic ducts to be clear, but the stones in the distal biliary tree remained unchanged.

Measurement of the sphincter resistance was normal and thus the T-tube was removed on January 16. The patient has had no abdominal distress since the removal of the T-tube one year ago.

### Discussion

In this case daily flushes were carried out for 197 days. However, more frequent flushes may have produced more expedient results. The patient performed the flushes without outside help and had no distress other than several transient attacks of nausea. One small stone still remains fixed in an inaccessible position in a biliary radicle and, unless it migrates into the common duct, it is of no clinical significance.

### Summary and Conclusions

1. A local survey into the efficacy of the ether flush technique of handling postoperative retained common bile duct stones indicates a rather high degree of success (85 per cent), provided an adequate trial time has been allowed.
2. We have recommended pure ethyl ether as the solvent of choice.
3. Stones in various locations within the duct are amenable to treatment.
4. Avoidance of pressure within the duct is important and may be avoided by the use of a two-way T tube or injection through an intravenous type polyethylene tube inserted into the standard type of T tube.
5. Use of a topical anesthetic such as 1:500 Nupercaine will decrease discomfort and prevent or act against sphincter spasm.
6. A stone larger than one cm. likely should be reoperated since the time required for success by flushing would likely be too long.
7. Stones removed at the initial operation should be tested in ether. The few that do not dissolve *in vitro* will likely not do so *in vivo*.
8. Persistence is essential. Plans should be made for a minimum of twice daily flushes for two months since the average time to achieve success was forty-seven days.
9. The patient or another lay person can safely conduct the flush after proper instruction.



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## NUMBER OF PHYSICIANS IN U. S. REACHES ALL-TIME HIGH

The total number of physicians—218,522—licensed to practice in the United States set an all-time record in 1953. Official figures from the fifty-second annual report on medical licensure of the AMA's Council on Medical Education and Hospitals indicate that 7,276 persons were added to the medical profession in 1953. During the same period, 3,421 physician deaths reported to the AMA Headquarters gives a net increase of 3,855 in the physician population of the country. In 1952, an increase of 2,987 was reported.

The report appearing in the May 29 issue of the *Journal of the AMA* shows that 14,434 medical licenses were issued in 1953 by the medical examining boards of the forty-eight states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii and Puerto Rico. Of this number, 6,565 were granted after written examination and

7,869 by reciprocity or endorsement of state licenses or the certificate of the National Board of Medical Examiners.

The present high level of medical education in this country is indicated by the fact that of the 5,646 graduates of approved medical schools in the United States to take examinations, only 3.8 per cent failed to pass. In comparison, however, of the 1,463 graduates of foreign medical faculties examined, 45.5 per cent failed.

Briefly, of the total number of physicians in the United States at the close of 1953—156,333 were engaged in private practice; 6,677 were in full-time research and teaching; 29,161 were interns or residents or physicians engaged in hospital administration; 9,311 were retired or not in practice, and 17,040 were in government service. —*AMA News Notes*, June, 1954.

## SYNDROME OF THE CEREBELLOPONTINE ANGLE

### Report of Two Cases

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THE cerebellopontine angle is the region in the posterior cranial fossa between the petrous pyramid, tentorium, cerebellum and the pons. The syndrome arising from lesions in this area consists of unilateral involvement of the cerebellum associated with paresis of one or more of ipsilateral cranial nerves V, VII, VIII, IX and X.<sup>1</sup>

By far the most common lesion that produces this syndrome is the acoustic neuroma. Of 3,265 verified brain tumors at the Neurosurgical Clinic in Stockholm, 304 (9.3 per cent) were unilateral acoustic tumors.<sup>4</sup> Cushing's series of 1917 included 468 verified brain tumors, of which forty-two (9 per cent) were tumors at the cerebellopontine angle; thirty of these were acoustic neuromas and twelve were miscellaneous tumors. Thus, tumors of the cerebellopontine angle present a relatively frequent problem in neurosurgical operations.

Cushing emphasized the importance of the chronology of symptoms and signs in the diagnosis of acoustic neuromas. These manifestations usually occur in the following order: (1) signs of auditory and labyrinthine involvement (deafness, vertigo, tinnitus); (2) suboccipital and occipitofrontal discomfort; (3) cerebellar signs (ataxia, dysmetria, atonia); (4) involvement of adjacent cranial nerves; (5) increased intracranial pressure (headache, nausea, vomiting, papilledema) and (6) dysarthria, dysphagia, cerebellar crises and respiratory difficulties.

Thus it is seen that the earliest symptoms of acoustic neuromas are the same as those usually associated with Ménière's disease, and early in the course of an angle tumor it is often extremely difficult to differentiate such a tumor from Ménière's disease. It is interesting to note that in the

Stockholm series, only one instance of a tumor at the cerebellopontine angle was diagnosed at this early stage, and that patient had come with a diagnosis of probable Ménière's disease.<sup>4</sup> In 560 cases of Ménière's disease in Dandy's series in which the posterior fossa was explored to perform section of the eighth cranial nerve for the relief of the disease, ten tumors of the eighth nerve (approximately 2 per cent) were found.

Laboratory tests may be the only means of differentiating Ménière's disease from angle tumors. Roentgenograms of the skull in the presence of angle tumors may reveal an enlarged or eroded porous acusticus, or erosion of the apex of the petrous pyramid. Studies utilizing air in angle lesions may show deformity of the fourth ventricle with or without hydrocephalus. In cases of tumor, the content of protein in the cerebrospinal fluid is usually increased. Recruitment of loudness is characteristic of the deafness found in Ménière's disease but is not characteristic of the deafness due to angle tumors.<sup>5</sup>

The following case reports emphasize the problems encountered in the differentiation of Ménière's disease from the syndrome of lesions at the cerebellopontine angle.

### Case Reports

**Case 1.**—A fifty-seven-year-old white man was admitted to the Mayo Clinic in July, 1953, because of a two-year history of constant left tinnitus, constant dull ache behind the left ear and loss of memory and ambition. He had noted progressive loss of hearing on the left side. For two months prior to admission, he had experienced difficulty with balance and walking and had fallen several times. He also complained of light-headedness.

Results of general physical examination and routine laboratory studies were within normal limits. Neurologic examination revealed grade 1 horizontal nystagmus on right and left lateral gaze, slight weakness of the left orbicularis oculi muscle and deafness of the left ear. The corneal reflex was slightly diminished bilaterally. Cerebellar function appeared normal. Otorhinologic examination, which included an audiogram and a caloric test, revealed loss of hearing of the perceptive type and

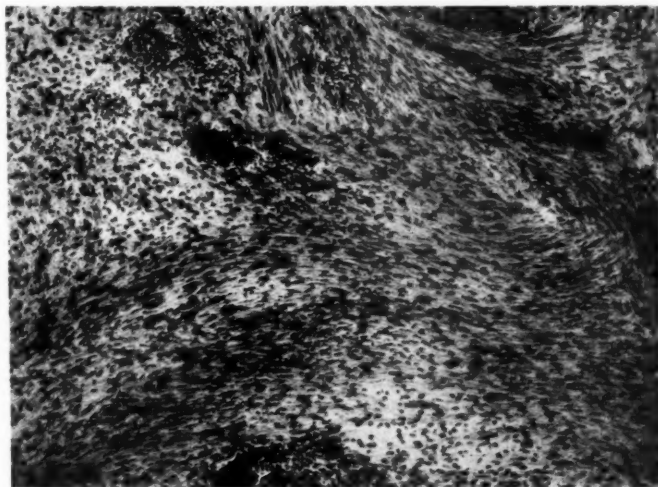
Dr. Uihlein is from the section of Neurologic Surgery. Dr. Mendelsohn is a fellow in Neurosurgery and Dr. Brown is from the section of Otolaryngology and Rhinology of the Mayo Clinic and Mayo Foundation.

The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

The opinions expressed in this publication are not necessarily those of the Department of the Air Force or Department of Defense.

absence of recruitment on the left; however, the left labyrinth was more active than the right. Ophthalmoscopic examination disclosed normal fundi. An electroencephalogram was interpreted as showing grade 2

Results of general physical examination and routine laboratory studies were within normal limits. Grade 1 nystagmus of "cerebellar type" was present on right and left lateral gaze. There was no papilledema. The corneal



Case 1; neurofibroma removed from the eighth nerve (hematoxylin and eosin;  $\times 100$ ).

dysrhythmia, strongest in the left temporal area. Routine roentgenograms of the skull and also Stenver's views of the internal auditory meatus revealed no abnormalities.

A pneumoencephalogram was interpreted as showing moderate hydrocephalus and slight rotation of the fourth ventricle to the right. The cerebrospinal fluid contained 100 mg. of protein per 100 cc. Left suboccipital craniectomy was done. A neurofibroma (see figure) the size of a large cherry was removed from the left eighth cranial nerve; the seventh cranial nerve was preserved. After an uneventful course in the hospital, the patient was dismissed twelve days following operation.

**Case 2.**—A forty-five-year-old white man had been seen at the clinic in 1946, at which time he had complained of left tinnitus and progressive deafness of the left ear, both of two years' duration, together with objective vertigo of one year's duration and left frontal and occipital headache of recent onset. Neurologic examination at that time revealed only deafness of the left ear. A diagnosis of Ménière's disease was made and medical treatment was instituted. He was relieved of symptoms, except for deafness, for one year. With recurrence of symptoms, a destructive labyrinthotomy was done. Three weeks after this operation the tinnitus returned but the vertigo did not.

He had remained well until January, 1953, at which time bifrontal headache with left occipital radiation recurred and was accompanied by projectile vomiting several times weekly. The patient experienced numbness of the left face in conjunction with the headache. Because these symptoms persisted, the patient came to the clinic in July, 1953.

reflexes, facial sensation and muscular power were normal, as was cerebellar function. The left ear was deaf. The caloric test showed a nonfunctioning labyrinth on the left but produced a fairly active nystagmus from the horizontal canal on the right with a questionable response from the right vertical canal; this finding is sometimes seen in angle tumors. Roentgenograms of the skull, both routine and Stenver's views, disclosed nothing abnormal.

Left suboccipital craniectomy was done. Exploration of the angle revealed no abnormalities and needle exploration of the left cerebellar lobe failed to reveal a neoplasm. The postoperative course was uneventful. The patient was dismissed on the tenth day after operation. The projectile vomiting ceased but the headaches persisted. Three months after the patient was dismissed, word was received from the family physician that suicidal tendencies had developed and the patient had been committed to a mental institution.

### Comment

The differential diagnosis of Ménière's disease and lesions of the cerebellopontine angle, primarily neurinomas of the acoustic nerve, remains a problem despite various laboratory aids in diagnosis. Usually the former condition is associated with a longer history, including remissions and exacerbations, while the latter lesion is usually progressive. Vertigo plus tinnitus, with or without deafness, is the rule in Ménière's disease, while tinnitus followed by deafness is the cardinal se-

quence in angle lesions. Medical treatment will help a large percentage of patients who have Ménière's disease but will not aid patients who have angle lesions. The latter condition produces progressive involvement of cranial nerves and increased intracranial pressure, whereas Ménière's disease does not. Postoperative mortality in angle lesions is 20 to 45 per cent. When other cranial nerves are involved and papilledema is present, the surgical mortality is increased by 20 per cent because of pontine edema after removal of the lesion. Early diagnosis and early surgical intervention, before pontine compression and pressure on the fifth, eighth and tenth cranial nerves occur, offer the best prognosis.

Suboccipital craniectomy is the usual approach in the neurosurgical treatment of Ménière's disease and angle lesions. In the management of Ménière's disease, total or subtotal (cutting the anterior two thirds) section of the eighth nerve relieves 80 per cent of the patients if medical methods fail. If the patient is deaf, the entire nerve is sectioned. In angle lesions, the eighth nerve is destroyed by the tumor and sacrificed; in total removal of the tumor and its capsule, the seventh nerve is frequently sacrificed because it cannot be isolated. This nerve can be saved if the lesion is small, as in the first case reported.

Case 1 illustrates several features that are interesting from an otologic standpoint. First, normal results of a caloric test are unusual in the presence of an acoustic neurofibroma. These tumors arise from the vestibular branch of the eighth cranial nerve and usually the function of the equilibrium labyrinth is more seriously impaired than is the hearing. Second, the audiogram showed pronounced impairment of high tones with a tendency for retention of the ability to hear low tones. This finding is compatible with acoustic neurofibroma and in questionable instances helps differentiate acoustic neurofibroma from Ménière's disease, in which there is apt to be more loss in low than in high tones. Absence of recruitment of loudness was present in this case, as would be expected in acoustic neurofibroma. As mentioned previously, recruitment of loudness is present in Ménière's disease. Tests for recruitment of loudness are becoming an important adjunct in differentiating acoustic neurofibroma from Ménière's disease; however, it must be remembered that probably 75 per cent of patients who have acoustic neurofibromas have little or no hearing left on

the side of the tumor by the time the patient reports for examination. Some hearing must be present in order to demonstrate recruitment of loudness.

The findings in the second case appeared to represent Ménière's disease, with the anxiety overlay which so frequently accompanies the distressing symptoms of this condition. Medical management controlled the attacks for a short period but the symptoms recurred with increased severity and frequency. Because there was no practical hearing remaining in the diseased ear and no findings to suggest a lesion of the cerebellopontine angle, destructive labyrinthotomy was carried out. Destructive labyrinthotomy is an extremely useful and relatively safe means of handling unilateral Ménière's disease that does not respond to medical measures, provided the hearing is impaired to the extent of being of little value to the patient and provided there is nothing to suggest a tumor of the cerebellopontine angle. If the hearing is relatively good or if there is suspicion of a lesion at the cerebellopontine angle, intracranial exploration appears to be the procedure of choice. In this patient, a destructive labyrinthotomy controlled the symptoms for a considerable period, after which symptoms developed that were sufficiently suggestive of disease of the central nervous system to indicate exploration of the cerebellopontine angle.

In typical acoustic neurofibromas and in typical instances of Ménière's disease, the diagnosis is not difficult. However, a considerable number of patients present symptoms that do not fall into a well-defined category and then all available means must be used in an attempt to arrive at the proper diagnosis.

These two cases illustrate the advantage of early surgical exploration in diagnostic problems so that these tumors can be uncovered and removed before the brain stem and adjacent structures are compromised. Vertebral angiography has not substantially assisted in the diagnosis of angle lesions.

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## ELIAS POTTER LYON—MEDICAL EDUCATOR OF VISION

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DR. ELIAS POTTER LYON, whom the University of Minnesota is honoring by associating his name with the new research building which we are dedicating today, served the University of Minnesota as Professor of Physiology and Dean of the Medical School from 1913 to 1936. Prior to coming to Minnesota, Dr. Lyon had served for six years as Dean of the Medical School of St. Louis University.

To have served for twenty-nine years as a medical dean, a vocation with the usual longevity of five to six years, is a remarkable achievement; particularly so since in neither of his posts did Dean Lyon assume the administrative responsibility for an established smoothly functioning organization, moving serenely along a well charted course. On the contrary, both at St. Louis and at Minnesota Dr. Lyon's appointment as dean followed a period of reorganization; and reorganization in a medical school is always a major surgical operation.

At Minnesota in 1911-12, the medical faculty listed eleven full professors of general surgery and, according to President Vincent, included most of the physicians in the telephone directories of Minneapolis and Saint Paul. To correct this situation, the entire faculty was asked to resign and a new faculty was organized: in part from those who had resigned and in part from new appointees who were brought to Minnesota from other institutions. Dean Lyon's first responsibility was to guide the Medical School through its convalescence from this operation, a convalescence which according to reports was a stormy one; unaided I might add, by "Wangenstein Suction."

Concerning this period the University's historian, James Gray, says: "For a moment after the reorganization plan was put into effect, peace seemed to have settled on the Medical School. But this was only for a moment. There began presently one of the most vivid, eventful and protracted fights of its history. This concerned

the question of whether or not the University should become affiliated with the Mayo organization at Rochester, a matter which agitated the entire Minnesota community for nearly a decade."<sup>2</sup> President George Edgar Vincent and Dr. William Mayo led the fight for this affiliation which they believed would place a firm foundation under graduate training in the medical specialties. Strongly supporting this program and responsible for working out its details were Dean Guy Stanton Ford of the Graduate School and Dean Lyon of the Medical School. Most members of the medical faculty, some of them albeit halfheartedly, supported Dean Lyon and the official University position in this controversy. These were indeed stormy times for the Medical School and for its administrative officers, but both weathered the storms safely and moved steadily forward as an effective team for a total of twenty-three years. During this period sound policies in medical education were inaugurated, facilities improved and the staff strengthened.

But, what sort of man was this who was at the administrative helm of the medical school during this important developmental period? Dean Lyon was born and attended secondary school in Hillsdale, Michigan. For his college education "he went to Chicago where, according to historian Gray, he worked at delivering milk through the mean streets of Chicago's west side to put himself through. He first fitted himself for a career as a bookkeeper in a small commercial college but a chance encounter with botany opened a more stimulating world to him and he trained himself all over again in a new field. To finance his graduate work in Chicago, he taught in what was then a university preparatory school. This phase he interrupted to go as an experimental biologist on one of Frederick Cook's expeditions to northern Greenland."<sup>2</sup>

"My decision to become a teacher," Dean Lyon said, "was made quite early, by the age of twenty certainly, perhaps two or three years earlier. It was chance that determined that most of my years should be spent in medical education, but it was deliberate choice that led me to prepare myself to engage in teaching as a career.

<sup>1</sup> Presented at the dedication of the Elias P. Lyon Laboratories, February 11, 1954.

<sup>2</sup> Dr. Diehl is Dean of the Medical Sciences, University of Minnesota.

"My being a dean was as accidental and unplanned as my being in medical education. We who went from the University of Chicago and other schools to the newly formed St. Louis University Medical School in 1904 faced a strange situation. The old University—the oldest in the Mississippi Valley—had taken over two recently united proprietary medical colleges. The doctors who controlled these schools drove a hard bargain with the good Jesuit fathers by stipulating that they should retain their chairs for a period of nine years. For that time they were to constitute the faculty and no new members could be added without consent. The result was some of us fundamental science teachers were members of the University faculty but not of the Faculty of the Medical School in which we taught. It was only after two or three years that we were finally voted into the medical faculty. Even then we were looked upon with some hostility and suspicion.

"In 1907 the dean, a part-time clinical man, suddenly resigned. The old-time owners of the school, constituting a large majority of the faculty, claimed that they had the right to name the new dean. The University on the other hand pointed out that this prerogative had not been reserved to the faculty in the transfer. The latter view prevailed and the University authorities declared that one of us fundamental laboratory men—their own appointees—must take the job. The lot fell upon me.

"You can imagine the situation. I headed a faculty over whom I had no real jurisdiction. The only bright spot was the whole time laboratory group who, like myself, were professional teachers. Practically all our efforts had to be put forth in strengthening the fundamental departments. From time to time as death or resignation intervened, something could be done on the clinical side. As for the rest, it consisted in seeking able young men for subordinate positions and in improving the student body. I came to believe that only on a firm foundation in science and full-time teachers in both scientific and practical branches can a medical school be built or do the work for which it exists. I came to know student problems as very real individual human problems that deserve the best human judgment and the sympathy of a god."<sup>6</sup>

This in brief review was Dean Lyon's background before coming to the University of Min-

nesota. To those of you who did not know him and to those of us whose memory of him has dimmed over the years, possibly I can best give a picture of the sort of man that Dean Lyon was by quoting briefly from a few of his writings.

First, let us listen to him in February, 1916, as a participant in a symposium at the Annual Congress on Medical Education of the American Medical Association. The title of this symposium was the "Relation of the Laboratory Courses to the Work in the Clinical Years." "First," he said, "I tried to work out this relationship on a family basis. Medicine, I said, is the mother of physiology, and I prepared to come here and paint a pretty picture of physiology taking care of mother in her old age. But when I looked around for father, my trouble began. I found that medicine had a promiscuous lot of children—quite a heterogeneous household ranging all the way from substantial oldest son, anatomy, to saphheaded chiropractic. I became fearful of discovering a scandal and gave up the idea of family relationship.

"I then saw that if I were intelligently to discuss the relation between the laboratory sciences and the work of the clinical years I needed to know something about the clinical years. So I followed a master of diagnosis in his day's work. I saw him percuss and auscultate; I saw him count corpuscles and analyze excreta; I saw him elicit reflexes and measure temperature; I heard him speak of valves and pressure and enzymes and neurons and calories. I said: 'That man is not practicing medicine. He is practicing physiology.' I watched a therapist at the bedside and found that he was not practicing medicine but pharmacology. I saw a surgeon earning a thousand dollars. I discovered that he was not practicing surgery but anatomy, pathology, physiology and—high finance! Finally, the relation I was seeking came suddenly into mental view. Anatomy, physiology, pharmacology, bacteriology, chemistry and the rest are not children of medicine; they are not the branches of an evolutionary tree; they are not handmaids; they are not stepping stones or preparatory stages. They are it. They are medicine itself.

"Every correct observation of function or disorder, every established fact of structure, every corroborated discovery in the field of causation or in the domain of restitution, every correctly interpreted experiment in test tube, animal or



man, whether made by layman, practitioner or professional scientist, is describable in the terminology of the fundamental sciences, and is really a constituent part of those sciences. These make up medicine as a real living body. For clothing there is folk psychology, a modicum of ritual, that indefinite confidence-producing mantle called personality, a veil of magic, and a vanishing hat, labeled 'empiricism,' with a hole in it through which talking may be done. But all these are outward habiliments. The warm, breathing, vital entity is science—the medical sciences or the science of medicine.

"Anatomy, chemistry and the rest are not preparatory to medicine, they are medicine itself. They are provinces, not independent kingdoms. Whatever is good anatomy is good medicine. Whatever is good physiology is good medicine. In giving the well-rounded training which will make his science a living entity, the anatomist or the physiologist or the pathologist or the chemist may be trusted to include the so-called practical matters which are the outward manifestation of medical practice, just as he may be trusted to do his best to instill the methods and powers of observation, experimentation and orderly reasoning which should be the inward essence of medicine itself. He may be trusted, I add, so to steer the ship of research that, though it skirt uninhabitable shores and though it penetrate many an unpromising inlet, in the end it will discover safe anchorage and will chart out passages by which the commerce of applied science may pass into now unknown seas.

"Moreover, if my thesis is even approximately current, the professors of surgery and medicine should expect to teach anatomy, physiology, pathology, et cetera, as part of their regular work. Instead of complaining because the students who come to you do not know it all, you should look on yourselves as duly appointed to teach these sciences and to continue the training of the juniors and seniors along the very lines laid down in the first two years. Thereby the marked break at present existing between the first two years and the last two years would in large measure be avoided.

"In the text of this homily lies, furthermore, the best argument for the unity of medicine. Did anyone ever hear of chiropractic chemistry or osteopathic physiology or even homeopathic pharmacology? There are no sects in science.

There will be none in medicine when medical men and their patients appreciate what medicine is and what it can do and cannot do. That joyful but distant millennium awaits the universal development of the scientific mind. It may come. Who knows? Think of the progress of the last four hundred years. Let us begin by making the doctors more scientific.

"This is my thesis, my creed, my optimistic hope. It is in the failure of us science teachers to realize our part of it, that I find my moments of discouragement. In how many of our students do we fail to establish logical habits of thought, fail to found a confident reliance on observation accompanied by an appreciation of the limitations and pitfalls of the senses, fail to awaken the imagination and to kindle such a fervor for science that the constant cry shall be, 'What, How and Why,' fail to establish sleepless guard against that insidious enemy of the understanding, *post hoc ergo propter hoc*—in how many of our students, I say, do we science men fail to do these necessary things? The number is large, I am sure."<sup>3</sup>

Next, I would like to quote from a paper which Dean Lyon gave in October, 1917, at the Conference on Hospital Standardization of the American College of Surgeons: "I am pleading," he said, "that hospital staffs consciously undertake their teaching obligation to the intern, as they consciously take up their other duties connected with the hospital and with the practice of medicine. I do not say that the intern needs formal lectures, but I do say he needs inspiring leadership. He needs to have his eyes opened to all the world around him; his imagination quickened to perceive what is beyond present seeing. He needs to have his footsteps led now forward to the new and the unknown, now backward to that repository of truth, the library, with its records of research, biography and medical history. I do say that every hospital staff should be a medical faculty. I do say that the man who has nothing to bring to others, has nothing to bring to a hospital, and has no place on its staff. I plead for the teaching function of a hospital as co-ordinate and co-equal with its other functions, and I demand a high valuation of this function in the standardization of hospitals. I demand that data on the education of interns be sought and evaluated by your committee and investigators."<sup>4</sup>

I might comment that since 1917, considerable

progress has been made in the education and training of interns. On the other hand, this statement as well as many others that Dean Lyon made in his early years are just as pertinent and just as applicable today as they were when he made them.

One of Dean Lyon's very special characteristics was his social and educational philosophy. For a glimpse of this, I quote from a commencement address he gave to the graduating medical class at St. Louis University in 1920. To these graduating students he said, "It is going to be an interesting age for you to live in. I was told that when I graduated. Every age is interesting for those who live in it. Your age is going to be 'different.' I was told that also. Every age is different; for civilization, like life, is a dynamic affair and always attaining—never completed.

"Some people think the social power-house is going to blow up and smash things generally. It is true the temperature just now is pretty high, and some foaming takes place in the steam-chamber. I think the heavy weight of war-time necessity ought to be taken off the safety valve. The excess pressure ought to be allowed to escape through our time-tested mechanism of free speech. I think the governor on the engine should be readjusted with tolerance and mutual sympathy. But I think the machine will presently cease to creak so much, and that evolution rather than catastrophe will describe the changing order, as you view it in your lifetime. No one is going to burn down the universities nor tear up the railroads nor destroy the factories nor kill all the people who wear good clothes.

"A new equilibrium will tend to be established. I say advisedly 'tend to be established'; for the social organism, as I just said, is like the biologic organism—never static but always in process of adjustment. And the forces of social metabolism are going to be the old, wholesome ideals of the home, the family, property, religion, law, regard for our neighbors, love of country, self-respect and hard work. Some of these ideals are going to be broadened. I suspect that our concept of neighborliness will undergo very striking modifications in the form of social legislation. I suspect our notions of property may change. I suspect that our ideal of patriotism may become different, as did the ideal of a citizen of Massachusetts or of Virginia in the early days of our constitutional government.

"Perhaps the hide-bound conservative with his blindness to human needs and his repressive tendencies is valuable as a drag upon the ship of state. I am doubtful about that. Perhaps the blatant radical with his frequent disregard for truth and his impractical schemes is valuable as a ferment and stimulus in the body politic. I am doubtful about that also. But I have no doubt of the value of the man who, with scientific candor, a love of truth and a calm mind, examines the phenomena of human relationship and forms strong opinions on political and social and moral and religious questions. That is the kind of man I think your education has fitted you to be.

"Be open-minded. Be not afraid to speak out, but have the facts first. Look to the past; but live in the present—just a little ahead of the present. Hold what is good; but reach out for something better.

"These remarks you may recognize as a paraphrase of the writing of a man named Paul, who lived a long time ago. He was a professor in the University of the World and a very wise man. Nowadays we might call him an exchange lecturer; for he went from place to place, speaking to those who wished to learn. 'Prove all things,' he said; 'hold fast that which is good.'

"I think Paul made the best commencement speech ever delivered. The gist of it is in the first three words: 'Prove all things.' That's the task. Most people do not prove things. They jump at conclusions. They hitch effect in front of cause. They see cause and effect as unrelated phenomena. They magnify the unimportant. The rabbit's foot and the ouija board are emblems of loose mental processes, from opposite ends of society. 'Prove all things,' said Paul. That is the scientific ideal! and its basis is the love of the truth. It takes a trained mind to prove things. You are trained and proving things should be your life work. 'Hold fast that which is good.' That is easier to do. It's just good common sense. Educated people ought to have common sense.

"The amalgamated experience of trained minds constitutes that 'common sense of most,' of which Tennyson speaks. It is the 'enlightened public opinion' on which democracy is founded. If you of this graduating class and of those others by thousands who in America receive, through the years, the benefits of higher education will, first of all, hold fast those nine simple words of Saint

Paul, we need have no concern for our country, nor for the world."<sup>3</sup>

Finally, a few quotations from an address Dean Lyon gave at the Congress on Medical Education just prior to his retirement in 1936. The title he gave to this address was "Swans Sing Before They Die." "This title," he said, "may need explanation. It should be recalled that this is only a partial quotation. The full stanza runs as follows:

Swans sing before they die,  
'Twere no bad thing  
Did certain persons die  
Before they sing.

I suggest the hypothesis that I had in mind in the latter part of the verse rather than the doubtful biology of singing swans.

"I am one of the oldest, perhaps the oldest, of medical deans in point of continuous service—the dean of deans! This connotes no special merit but points to a certain agility, adaptability and power of endurance.

"I first planned to portray the personages who have acted in the panorama of medical education, great men who have done much for medical education, have finished their parts and left the stage. However, I decided that the time is not ripe for history, that we are still in the midst of doing and that it is better to keep the eyes fixed ahead, therefore I shall speak of some of the problems of medical education which I consider important and which I hope the future may solve.

"The first concerns the choice and admission of students. This involves a responsibility on the part of college officers which they have rarely sufficiently realized and faced. It predicates decisions on which the whole life and work of young men and women may depend, and in which the future standards of medical practice may be foreshadowed.

"The great question emerges—can we get any better basis for admission than college grades, intelligence tests and interviews, for such as believe in that technic?

"We medical educators should be concerned; the American Medical Association should be concerned, for the individuals that will compose this great body are the product that is being manufactured in the medical schools. Until we are surer about our raw material, more exacting in

our inspections, more clear as to what our product should be, the medical profession will average lower than it should in the great field test that goes on day by day in the fight for better health.

"Another feature which causes concern is the fact that medical education is in general restricted to those who have money. This fact means inevitably that some superior men cannot enter the medical profession and that the average standard is lowered thereby.

"When one remarks the hosts of inferior individuals who throng to college halls, bungle their opportunities and depart little better than they came, the tragedy of the situation becomes titanic. Under our system we can suggest nothing better than scholarships with a well organized arrangement for their distribution to the most able candidates. I firmly believe that at present ten million dollars would at no other point create such dividends of medical progress as in the search for and assistance of submerged superior ability.

"In general I am favorable to increased requirements. But before the three-year premedical course becomes embedded in actions of the Council on Medical Education and Hospitals or in the requirements of state boards I advocate that an alternative proposal be experimented with by some medical colleges. I would add another year to the medical course itself. I would transfer to the medical curriculum some of the courses now classed as premedical, such as organic chemistry, sociology and psychology. I would leave the minimum entrance requirement at two years of college as now, but the transfer described would permit of a wider sampling of college offerings in the direction of cultural background. I think the added medical year would enable faculties to plan a better balanced medical curriculum. I would begin anatomy, biochemistry, perhaps bacteriology in this year. But I would devote at least half the time to subjects now considered premedical. Psychology, adapted to medical students and thought of as the basis of mental medicine in the same way as anatomy and physiology are basic to physical medicine, would certainly be required and in the medical curriculum.

"The question of overproduction of doctors is of the very greatest importance to medical students, to the medical profession, to the maintenance of standards of ethical practice and to the

public welfare. I contend that there are already too many doctors, even if they were properly distributed and even if their services were available to all people, neither of which contingencies is true nor likely to be true under American conditions. If it is claimed that competition is the life of trade, I retort that competition may be the death of a profession. These are just bald statements. In many years at dean's desk, I have watched the increasing difficulty and discouragement experienced by young doctors in earning a living."<sup>7</sup>

There is much more that I would like to give you from Dean Lyon's writings and many other things that I would like to say about him. The limitation of time, however, precludes my saying much more. I just hope that I have been able to give you a bit of a picture of this man who served as administrative head of our medical school for almost a quarter of a century. Concerning his administration, President Lotus D. Coffman said at the dinner honoring him upon retirement that "Dean Lyon was always kindly and generous in dealing with others, professional and high minded in discussing the problems of the medical school, and friendly to students and staff. In his administrative capacity he kept his face to the future rather than to the past. A scientist in his own right, he knew how to evaluate the scientific efforts of others. He has been a university dean who administered the affairs of his college with no thought of gain to himself and a spirit of selflessness which others would do well to emulate, and his contribution to the university is as enduring as the benefits to medical science are to humanity."<sup>1</sup>

In medical education Dean Lyon long occupied a position of national leadership. He had the vision of new horizons and the courage to depart from traditional methods, yet he was always wisely conservative. He left enduring footprints

in the sands of medical education and his imprint indelibly upon this medical school. This is in the records, but to the students who were privileged to know him, Dean Lyon's outstanding qualities were those of kindness and personal, human interest. He always considered the welfare of the student of first importance and helped many a one over the rough spots on the road to a medical career.

Years ago I remember hearing a verse which it seems to me is applicable to my appraisal of Dean Lyon here this evening. This verse was something like this:

A King once said of a prince struck down,  
'Tis taller he seems in death:  
And this speech holds truth for now as then,  
'Tis after death we measure men.

And so a decade and a half after his death we can say of Dean Lyon that the shadow of his accomplishments and influence have lengthened rather than shortened with the passing of time.

Certainly, therefore, it is most fitting that Dean Lyon's name should be associated with the future as it has been with the past of this Medical School. And it is a great privilege for me and for all of us to dedicate this new research building in his honor as the Elias Potter Lyon Research Laboratories.

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#### AUXILIARY LAUNCHES "TODAY'S HEALTH" TEST

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## MID-PELVIC CONTRACTION AND LABOR

FRANCIS M. SWAIN, M.D.

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IN RECENT years, the active obstetric staff of Maternity Hospital of Minneapolis has been disinclined to recommend elective cesarean section for patients on the sole indication of contracted mid-pelvis. As a result, many such patients have been given a trial of labor.

### The Mid-Plane of the Pelvis

The mid-plane is generally regarded by obstetricians today as one extending from the lower inner border of the symphysis pubis posteriorly through a line connecting the ischial spines to a point on the anterior surface of the sacrum near the junction of the fourth and fifth sacral components, depending on the length and shape of the sacrum. The distance between the ischial spines is called the bispinous diameter. The anterior-posterior diameter of this plane extends from the lower inner border of the pubis posteriorly to the point on the sacrum mentioned above. The posterior sagittal of this plane is that portion of the anterior-posterior diameter extending from its intersection with the bispinous to the point on the sacrum mentioned above.

Hanson<sup>4</sup> was one of the first to recognize that certain difficulties connected with pelvic delivery might be related to abnormalities present in the mid-pelvis. In 1930, he described an instrument he had invented with which he could manually measure the distance between the ischial spines. The instrument was never generally popular, although its inventor was able to obtain quite accurate measurements with it. DeLee also invented an instrument for the same purpose.

There is a great range of interest in x-ray pelvimetry. It varies from those who never use it at all, to those who advise elective cesarean section for patients having small mid-pelvic measurements. Of the latter group, McKelvey<sup>7</sup> advised section in patients with a bispinous diameter of less than 9 cm., who seemed to have a fetus weighing 3500 grams or more. Perhaps the most concise evaluation of the place of x-ray pelvimetry in obstetrics was done by DeLee,<sup>13</sup> who is quoted as saying: "Since the x-ray cannot measure the strength of the pains, the moldability of the head, or the expansibility of the pelvic

joints, or the mutation of the sacrum, or the rigidity of the soft parts, or the metabolism of the parturient, et al, you can see what a small part it plays in the routine of delivery. But I would not be without it."

### Patients Who Should Have X-Ray Pelvimetry

The following are indications for x-ray pelvimetry:

The nullipara at term with an unengaged fetal head.

Most breech presentations, particularly those in nulliparae.

In patients where there has been a history of a previous dystocia or an unexplained stillbirth.

When on bimanual examination the sacral promontory can be reached.

When the sacral cavity seems shallow or flattened.

When the ischial spines are unusually prominent.

When the bituberous diameter (the transverse of the outlet) is 8.5 cm. or less.

During labor if progress is unsatisfactory.

### Criteria for Contraction of the Mid-Plane

Eller and Mengert<sup>3</sup> gave the average measurements for the mid-pelvis as follows: bispinous (B.S.) 10.5 cm., anterior-posterior (A.P.) 11.5 cm., and posterior sagittal (P.S.M.) 5 cm. Weinberg<sup>12</sup> gave the same averages. Most authors are agreed that a bispinous of less than 10.0 cm. is evidence of some degree of contraction of that diameter. Dyer<sup>2</sup> found that in 197 patients with a bispinous of less than 10 cm., 30.4 per cent eventually had to be delivered by cesarean section. There is less agreement as to what constitutes contraction in the A.P. diameter of this plane. Thoms and Wyatt<sup>11</sup> consider this diameter as being contracted at different figures, according to the shape of the pelvis. With the dolichopellic type, if the A.P. of the mid-plane is less than 12 cm., with the mesatipellic, if less than 11.75 cm., and with the brachypellic, if the anterior-posterior diameter is less than 11.5 cm., contraction is present.

### Pelvimetry Methods Used in This Study

The majority of the patients in this group had their x-ray measurements made of their pelves employing the Steele-Javert technic.<sup>10</sup> The last third of the patients were measured by the Hodges-Dippel direct parallax method, somewhat modified.<sup>8</sup> Any of the standard techniques will give comparable accurate measurements. Weinberg and Scadron<sup>14</sup> compared the results in 100 patients each measured with four different methods, and found each one accurate to within 0.1 cm.

### Materials Used

For the purpose of this study, the records of all nulliparous patients who had had x-ray pelvimetry done at Maternity Hospital and delivered there, between the dates October 1, 1951, and October 1, 1953, were reviewed. There were 119 patients in this category whose mid-pelvic measurements were below the critical levels selected. Those levels were arbitrarily chosen as being less than 10 cm. for the bispinous and/or less than 11.5 cm. for anterior-posterior diameter of the mid-pelvis. All of these patients were in labor for some period of time and all of them eventually delivered either vaginally or abdominally in this hospital.

All of these patients had minimal amounts of analgesia during labor, usually one dose of Demerol or Nisental with or without scopolamine. Sometimes in some of the longer labors, of course, the sedation was repeated. Occasionally, Trilene was also used in the first stage. For delivery, pudendal block with 1 per cent Procain (or Cyclaine) supplemented with nitrous oxide-oxygen inhalation administered during contractions and also during birth of the head. The sections were done either with spinal or local supplemented with gas-oxygen after delivery. It is felt that analgesia and anesthesia were not a factor in the production of the asphyxia present in some of the babies.

For this study, the term "Spontaneous Delivery Group" includes low forceps deliveries as well as the strictly spontaneous variety. The definition of low and mid-forceps is the same as that agreed upon by Eastman, Greenhill, Titus, and McCormick. The term "Difficult Delivery Group" as used in this study includes the mid-forceps, the breeches whose heads were delivered with some difficulty with forceps, and the cesarean sections.

### Bases for Comparison

There are two methods currently popular which are claimed by their originators to be helpful in prognosticating the outcome of labor through the mid-pelvis. It is felt by the author that in some instances too much weight may be given to the prognosis based on radiologic findings in selecting patients for elective cesarean section, since there are so many other factors involved in a successful and atraumatic vaginal delivery. One can hardly believe that the originators of the methods to be discussed ever intended them to be used as the sole basis of predicting the outcome of labor.

Weinberg and Scadron<sup>14</sup> devised a method which used the sum of the bispinous and posterior sagittal diameters. They found that a narrow bispinous carried a good prognosis if it were compensated for by a generous posterior sagittal. They felt that delivery from below rarely occurred with sums of 13.5 cms. or less. The other method was devised by Mengert,<sup>9</sup> who considers the mid-plane roughly as an area and estimates it by multiplying the bispinous measurement by the antero-posterior measurement. The figure obtained is then compared to his average one of 125. Eighty-five per cent is considered the borderline between adequacy and contraction. Mengert found by trial and error that mid-pelves having an index greater than 85 per cent were usually uncomplicated. Below this critical level they were much more likely to terminate in operative deliveries. Kaltreider,<sup>6</sup> using Mengert's index for the mid-pelvis found that when the inlet was adequate and the index for the mid-pelvis was over 85 per cent, in only 6.1 per cent was there difficulty. When the inlet was all right and the mid-plane index was less than 85 per cent of average, there was difficulty in 40 per cent of the deliveries. He had about the same results when applying Weinberg and Scadron's sums. When the inlet was adequate and the mid-plane sum was above 13.5 cm., there was difficulty in 6.3 per cent. If the sum was less than 13.5, there was difficulty in 30 per cent of the deliveries.

### Results in Our Series

The length of labor for all patients delivering vaginally averaged fourteen and a half hours, and ranged from four to seventy-one and three-quarter hours. The average length of labor for the operative vaginal deliveries (mid-forceps and

# MID-PELVIC CONTRACTION AND LABOR—SWAIN

TABLE I. MENGERT'S MID-PLANE INDEX

	Number	% Difficult	% Difficult
Above 85% of normal	78	15	19
Below 85% of normal	41	17	41

TABLE II. WEINBERG-SCADRON MID-PLANE SUMS

	Number	Difficult	% Difficult
Over 13.5 c.n. (BS plus PSM)	73	15	21
Below 13.5 cm.	46	17	37

forceps on the after-coming head) was twenty-two hours. There were eighty-seven spontaneous (or low forceps) deliveries, nineteen mid-forceps operations, four cases in which there was some difficulty in delivering the after-coming head with forceps, and there were nine cesarean sections. There were 109 vertex presentations, seven breeches, one brow, and two face presentations. The average length of trial labor before cesarean section was nineteen and a half hours. There were sixty-one patients with a bispinous of less than 10.0 cm. and only 11.4 per cent terminated in cesarean section. This was considerably less than Dyer's<sup>2</sup> rate of 30.4 per cent. There were five patients in this series who had bispinous diameters of less than 9 cm. and babies who weighed more than 3500 grams. All five delivered vaginally, although it is possible the largest might well have been better delivered abdominally. The babies in this group ranged in weight from 7 pounds 12 ounces to 9 pounds 5½ ounces, two were delivered spontaneously and the other three were delivered by mid-forceps. Two babies were mildly asphyxiated and in one this was classified as being severe. All lived and seemed quite normal when they were discharged.

Of the nine sections that were done, one was on a patient with a frank breech and poor labor, another had a face presentation with poor labor, and there were five patients who had vertex presentations but in whom the fetal head was not yet engaged at the time of the operation. Also, one section was done for a brow that had not engaged. Thus, there was only one patient who required a cesarean section because of difficulty incurred while the fetal head was attempting to traverse the contracted mid-pelvis. This patient had a 7 pound 15 ounce baby in LOT position with a bispinous of 9.5 cm. During the last ten hours of labor there was no progress, with the cervix at 5 cm. and the fetal head failing to

TABLE III.

	Spontaneous	Difficult	% Diff.	Asphyxia	% Asphyxia
APM less than 11.5 cm.					
BS 10 or more cms.	47	10	21	7	15
BS less than 10 cm.	19	7	37	4	21
APM 11.5 or more					
BS less than 10 cm.	21	15	71	11	52
APM less than 11.5 cm.					

TABLE IV. NEONATAL ASPHYXIA

Type of Delivery	Number Cases	Asphyxia	% Asphyxia
Spontaneous or low forceps	87	7	8
Mid-forceps	23	11	48
Cesarean sections	9	5	56

descend lower than a plus 1 to 2 station.

As can be seen from Tables I and II, the incidence of difficulty increased markedly when the mid-plane index was less than 85 per cent of average, or, when the sum of bispinous and posterior sagittal diameters was less than 13.5 cm. However, it will be noted that the majority of the patients whose measurements fell below these critical levels still had uncomplicated deliveries.

As can be seen from a study of Table III, the degree of difficulty in delivery and the incidence of asphyxia are closely correlated. The lowest incidence of both was found in the group of patients who had an APM less than 11.5 cm. and whose BS was 10 cm. or more. The next higher rate of difficulty and of asphyxia was in the group where the BS was less than 10 cm. and the APM was 11.5 cm. or more. The group responsible for the highest incidence of difficulty and of perinatal asphyxia was that one in which the BS was less than 10 cm. and whose APM was less than 11.5 cm.

## Maternal Results

There were no maternal deaths in this group. One of the patients who had a cesarean section had a febrile course and there were two patients who were febrile following spontaneous delivery (or outlet forceps). None of the patients who had been delivered by mid-forceps had febrile puerperia but one had dribbling of urine for a few days, and another suffered a complete tear into the rectum as well as atony of the bladder for a few days. Two other patients had atonic bladders for a day. These had also been delivered by mid-forceps. One of the patients who had a cesarean section vomited partially digested food during the

procedure and subsequently developed aspiration pneumonia. Bronchoscopy was performed and the patient eventually recovered.

#### Fetal and Neonatal Statistics

There were no neonatal deaths. There was one stillbirth, the baby dying during delivery. A 5 pound 12 ounce baby was delivered by breech extraction and forceps to the after-coming head through a borderline pelvis.

There were twenty-three babies who showed some degree of asphyxia. Mild asphyxia was considered to be present when the child did not cry and/or his color and respiration were poor for one and one-half minutes or more. Severe asphyxia was said to exist when the above findings were still present after five to six minutes of treatment.

In the spontaneous or outlet forceps group there were six with mild and one with severe asphyxia. In the mid-forceps group, there were three with mild and eight with severe asphyxia. In the cesarean section group there were two with mild and three with severe asphyxia. Also, Table III should again be referred to, since it shows the incidence of asphyxia of the baby in relation to the degree of contraction of the maternal pelvis.

#### Summary and Conclusions

The records of 119 nulliparae delivering at Maternity Hospital between October 1, 1951 and October 1, 1953, and who had mid-pelvic measurements below certain arbitrary critical levels, were reviewed. The indices for the mid-planes were calculated as suggested by Mengert and these were compared in terms of percentages of his average. It was found that while there was a much higher incidence of operative deliveries below 85 per cent of Mengert's average value, there were some above this level with operative deliveries. Also, the majority of those below the 85 per cent level had uncomplicated deliveries. The same group of mid-pelvic measurements were then considered as recommended by Weinberg and Scadron, i.e., using the sum of the bispinous and posterior sagittal diameters. Although these authors had stated that delivery from below rarely occurred when this sum was less than 13.5 cm., it was found in this study that 63 per cent of the patients with a sum less than this had spontaneous or low forceps deliveries. Of the 119 patients only 9 required cesarean section for delivery or an incidence of 7.5 per cent. There was an increasing incidence of neonatal asphyxia in going from

the spontaneous to the mid-forceps group. Curiously, there was an even higher rate of asphyxia in the babies delivered abdominally. When both the BS and APM diameters were below the critical levels chosen, the incidence of difficult delivery and of neonatal asphyxia were more than three times what they were when only the APM measurement was reduced and about twice as much as when only the BS diameter was contracted. When both of these diameters are reduced below the critical levels used in this study, one may expect 71 per cent of the deliveries to be difficult and 52 per cent of the babies to exhibit some degree of asphyxia. All of the babies who were asphyxiated, left the hospital in good condition. According to Benaron et al.,<sup>1</sup> if the child survives the neonatal period it may be expected to develop normally, mentally and physically.

Measurements of the mid-plane of the pelvis obtained by x-ray are helpful in evaluating the probable outcome of labor in parturients but only when viewed in their proper perspective: i.e., when considered along with the estimated size of the fetus, its presentation and position, and the quality of labor the patient is having. Given a normal pattern of labor with contractions of good quality, the majority of women can deliver an average size baby safely through a mid-pelvic plane which is moderately contracted. As a result of the decreased space available in this area, there may be an increased incidence of the fetal head becoming arrested in either an occiput posterior, or transverse position, thus necessitating rotation and forceps delivery.<sup>5</sup> A follow-up on the babies who had some degree of asphyxia is planned.

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The Minnesota Society of Clinical Pathologists

## THE SURGEON AND THE BACTERIOLOGIST

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THE PRACTICE of making a bacteriologic diagnosis by having a technician in a general laboratory do a few stains and cultures on any type of specimen, suitable or not, depending on the whims of the clinician, is obsolete. Bacteriology as applied in modern clinical medicine is an extensive and complicated field and accuracy is important. The technical work must be done by, or under the direct and close supervision of, one who has had extensive training and experience in the field and who has the time and interest to evaluate new discoveries important in the field. In order to provide satisfactory bacteriologic studies, certain conditions must obtain, namely, the proper specimen must be provided, it must be adequate in amount to allow the desired studies as indicated by the history and pathologic examination, and the laboratory personnel must be prepared and willing to make whatever studies are necessary to determine the nature of the etiologic agent.

### Proper Specimens

In order to facilitate provision of the proper material, a few suggestions may be helpful. It is well to aspirate the pus from an abscess and save a generous portion in a sterile, wide-mouthed, screw-capped bottle. Pus collected on a cotton swab is likely to be contaminated from the skin and will likely be inadequate in amount. It is unfair to the patient to send a sample of pus on a swab when large amounts are obtained during drainage and then discarded. It is desirable also to save a portion of the wall of the abscess for culture since it may contain more organisms than

the pus. Draining sinuses should be curetted and in some cases extirpated. This avoids contamination from the cutaneous orifice and provides a more adequate specimen. Ulcers of the mucous membrane or skin should be biopsied after careful selection of areas of probable activity. A punch biopsy is easy to perform but may not provide an adequate amount of material; biopsy by means of a scalpel is generally preferred. Lymph nodes should be selected to obtain those showing evidence of recent activity; if available, several should be removed. A small portion of each node should be saved for histopathologic study and the remaining larger portion kept without contamination so that bacteriologic studies may be done if desired. Lesions of deep organs, such as lungs, liver, spleen, kidneys, salpinges, epididymides, bursae and bones, may be saved after histopathologic studies indicate they are likely due to an infection. A satisfactory policy is to place a generous portion in a wide-mouthed bottle in the operating room. This specimen may then be used for culture if needed.

### Amount of Specimen

The specimen must be adequate in amount because experience has shown that in chronic infections one must always consider the possibility of tuberculosis, brucellosis or some mycotic condition, in addition to such common pyogens as micrococci, streptococci, *Salmonella*, *Shigella*, *Pasteurella*, *Klebsiella* and others. It is known that acid-fast stains frequently may fail to demonstrate tubercle bacilli and that positive results of stains are sometimes due to saprophytic acid-fast bacilli; therefore, this technique is unreliable for diagnostic purposes. "Sulfur granules" are not always present in actinomycosis and structures grossly similar to them may be due to many

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From the Section of Bacteriology of the Mayo Clinic.

other organisms. Fungi frequently cannot be found in the histologic sections although they are easily demonstrated by culture. Conversely, sections of tissue sometimes contain structures resembling certain fungi but not in characteristic form reliable for diagnosis. There is no characteristic histopathologic picture in chronic lesions due to *Brucella*. Therefore, in order to make adequate bacteriologic studies for such a wide variety of organisms, keeping in mind they may be few in number, a generous specimen must be provided.

#### Sensitivity to Antibiotics

It is frequently important to isolate the causative organism to determine whether or not it is sensitive to certain antibiotics. It is desirable many times to reisolate the organism after a certain amount of treatment to determine if it has become resistant to the drug. The methods for these tests are varied; they present many technical problems for accuracy and are constantly changing. Each new antibiotic presents a new set of problems for evaluation.

#### Accessory Aids

In chronic infections, many accessory diagnostic aids may be of little value and even may be misleading. Positive results of a tuberculin test do not establish that a given lesion is tuberculous, and negative results do not entirely rule out the possibility of tuberculosis. Approximately a third of the patients seen at the Mayo Clinic who have localized lesions due to *Brucella* have no specific agglutinins against this organism. Patients who have osteomyelitis due to *Salmonella* also may have negative agglutination reactions for those organisms. Skin tests for the diagnosis of

fungous infections are, in general, rather unreliable for establishing a positive diagnosis.

#### Histopathologic Examination

Histopathologic examination is of limited diagnostic value in most chronic infections. The pattern for tuberculosis is extremely varied and may be imitated by many other conditions due to certain viruses, bacteria and fungi. The histopathologic response in chronic brucellosis may range from one closely simulating caseous tuberculosis to one typical of extremely mild nonspecific inflammation. The problem related to the limitations of the histopathologic diagnosis of fungous infections already has been considered.

#### Bacteriologic Emergencies

Certain emergencies of a bacteriologic nature must be recognized by the surgeon. The development of pseudomembranous enterocolitis resulting from antibiotic therapy must be recognized early and a specimen of stool obtained immediately for Gram's stain and culture. The patient's future may depend on the alertness of the surgeon and the prompt co-operation of the bacteriologist. A delay of a few hours may cost the life of the patient. Tetanus and gas gangrene are also emergencies but the bacteriologist is of little or no assistance in these conditions. The surgeon must carry the entire responsibility, basing his judgment on the history and clinical findings.

Satisfactory bacteriologic studies of material obtained from surgical patients are not only extremely important in order to permit proper treatment but depend in a large measure on the co-operation of the surgeon in supplying plenty of the proper material.

#### AMA PREPARES TWO CIVIL DEFENSE BOOKLETS

What part the physician should play in civil defense activities is aptly depicted in a series of six articles which AMA's Council on National Emergency Medical Service currently is offering in booklet form. Reprinted from the *Journal of the AMA*, these articles discuss such aspects as organizing for civil defense, developing medical participation in civil defense, the physician's civil defense responsibilities, and the doctor and the improvised hospital.

In addition, the Council now has available the "Proceedings of the Medical Civil Defense Conference" which was held in February in Louisville, Kentucky. This should prove a valuable sourcebook inasmuch as it contains rather thorough discussions of atomic bombing, the threat of biological warfare, civil defense against chemical warfare, psychological warfare, and a case study of a typical state's civil defense organization.

Both booklets may be secured on request from the Council.

# President's Letter

## VETERANS' CARE REVISED

As of June 30, 1954, the contract of the Minnesota State Medical Association with the Veterans Administration, to provide home-town medical care for veterans in Minnesota, was cancelled by the Veterans Administration.

Physicians of the state association have already been notified of the changes now in effect, but a summary here may help to supplement this information.

At the implementation of the original contract in 1946, all members were automatically included as participating doctors, but that participation was not compulsory. The Veterans Medical Service Division in the State Office served as a clearing house for processing bills of members who provided medical service for veterans. Processing was speeded up by this method, and physicians did not need to deal directly with the local offices of the Veterans Administration. The handling of vouchers, authorizations and billing were done on a group basis, thus eliminating the need for individual physicians to work directly with the Veterans Administration. All questionable cases were reviewed by the Veterans Medical Service Committee of the State Medical Association.

On an over-all picture, this arrangement has been workable, and, with a few minor exceptions, has worked satisfactorily for all concerned.

As of June 30, however, this arrangement was terminated. The Veterans Administration has been in contact with all members of the Association in an attempt to secure their co-operation as "designated physicians." Those who become such participating doctors will have to deal directly with the Veterans Administration, submitting bills, requesting authorizations for service, and receiving payment for service.

The Association feels that through this contract, it has rendered immeasurable service to the physicians of the state and to all veterans using this service. The State Office appreciates the degree of co-operation which physicians of Minnesota have given in making this service valuable.

It is felt that this contract was also of great help to the Veterans Administration in assisting them in securing adequate treatment and examination for veterans at government expense. Now that this relationship is terminated, physicians should realize that the state association has no official position to maintain, nor any obligation to mediate disputes over provision of service or payment for service with the Veterans Administration, as was the case under this contract.



*President, Minnesota State Medical Association*

# Editorial

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## BACTERIAL ASPECTS OF ACUTE GLOMERULONEPHRITIS

THE HEMOLYTIC streptococcus is a versatile organism. It infects a number of animal species and in man results in such diverse clinical pictures as scarlet fever, erysipelas, rheumatic fever, and acute glomerulonephritis. For some time, investigators have been attracted by the possibility that some of these manifest variations in kind of illness might be explained by differences in the infecting strains. In the early days, bacteriologists went too far in this direction. Each strain was named according to the type of clinical disease with which it was associated. With the development of serological techniques for classification, it soon became clear that most hemolytic streptococcal infections in man are caused by organisms belonging to a single serological group, designated as group A, but it has been difficult to correlate clinical entities with any of the forty-odd serological types which are subdivisions of group A and are designated by number.

In scarlet fever, for instance, it was originally thought that only certain types of group A streptococci might result in a skin rash. It now seems that, although strains may at times vary in their ability to produce erythrogenic toxins, scarlet fever can be produced by most of the common types of group A streptococci.

There has been considerable speculation concerning the possible existence of rheumatogenic and nephritogenic strains of group A streptococci. Outbreaks of streptococcal infection have been described in which an unusually low or high incidence of these non-suppurative complications has seemed to occur. One of the difficulties in evaluating such reports is that, in any one epidemic, one type usually predominates. Without a number of types producing simultaneous infections, it is impossible to be sure that some other factor was not operating. Another difficulty is one of definition. Without sufficient clinical and laboratory data and without careful definition of both the preceding streptococcal infection and the non-

suppurative complication, it is impossible to arrive at an accurate attack rate. Furthermore, it is hazardous to compare attack rates obtained by different reporters who have used quite different criteria for determining the incidence of streptococcal infections and of their sequelae.

There is little evidence that strain variation plays a significant role in the incidence of acute rheumatic fever. Careful studies of populations in which infections with a number of types were occurring simultaneously have shown a remarkable constancy of the attack rate for rheumatic fever regardless of the infecting type of streptococcus.

In contrast to rheumatic fever, the attack rate of acute glomerulonephritis appears to be quite variable. Large-scale epidemics of streptococcal infection occurred in the Armed Forces during World War II with little or no acute nephritis. Both acute glomerulonephritis and acute rheumatic fever tend to occur in families, but acute nephritis may develop simultaneously in several members of a family, whereas acute rheumatic fever tends to appear at different times in the same family or in different generations. The former suggests a bacterial factor, whereas the latter suggests a genetic or host factor.

Interest in bacterial factors in the pathogenesis of acute nephritis has been revived by the evidence produced by Rammelkamp and his associates that several epidemics and many individual cases of acute glomerulonephritis have—in recent years at least—been preceded by infections with type 12 streptococci. Whether the nephritogenic property of this strain is dependent upon the serological property which makes it a type 12 is not known. In the epidemic at Red Lake Indian Reservation, described elsewhere in this issue, a group A streptococcus was found which so far is serologically non-typable. Concurrently a non-typable group A streptococcus was isolated from several members of a family in Minneapolis in whom five of the seven members developed acute glomerulonephritis. If these strains prove to be a new type, their nephritogenic potentialities may



possibly be explained by some biological property which they hold in common with type 12.

The observations at Red Lake seem to support the opinion of some clinicians that streptococcal infections of the skin are particularly prone to result in acute glomerulonephritis. However, even with careful bacteriological studies, it is impossible to be certain whether such skin infections are primary or secondary since most patients with skin infections will show similar streptococci in the nose and throat, and conversely many patients with acute streptococcal infections of the upper respiratory tract will show large numbers of streptococci in cultures of the skin. This aspect of the problem warrants further study. It is an intriguing possibility that certain strains of streptococci which are nephritogenic may also have a predilection for infecting the skin.

The bacterial aspects of acute glomerulonephritis and acute rheumatic fever are not a matter of purely academic interest. To the bacteriologist and the epidemiologist, the association of these diseases with hemolytic streptococcal infections is quite regular. To the practicing physician, the association appears to be somewhat inconstant because close to half of all streptococcal infections are subclinical or so mild that they are never brought to his attention. It is nevertheless important for the clinician to be aware of the role of streptococcal infections in the etiology of these diseases because their control is primarily dependent upon the proper treatment and control of streptococcal infections.

LEWIS W. WANNAMAKER

## PRESENT TRENDS IN THE TREATMENT OF HYPERTENSION

THE AVAILABILITY of drugs which reduce the blood pressure of patients with essential hypertension has changed methods of treatment and permitted optimism concerning the results of medical treatment. A physician considering a patient with hypertension will of course search for pheochromocytoma, coarctation of the aorta or unilateral renal disease; surgical treatment of these conditions relieves hypertension in most instances.

Sympathectomy for hypertension has largely been abandoned because medical treatment re-

lieves hypertension more frequently than does sympathectomy. However sympathectomy occasionally is advisable. Restriction of sodium in the diet also has been largely abandoned except in instances of congestive heart failure. The percentage of good results in reducing blood pressure resulting from restriction of sodium is small and other methods of treatment are usually much more productive. Too many patients are using a so-called salt-free diet without evidence of benefit.

It is difficult for a student of clinical hypertension to avoid annoyance because of extravagant claims made for preparations which sometimes reduce blood pressure by some manufacturers. According to the advertisements of some manufacturers, solution of the problem of essential hypertension is simple; actually it is more often than not complex. Annoyance is accentuated by the observation that many more physicians will read and believe advertisements than will read more honest and informed articles in medical journals.

Drugs are available which reduce blood pressure and which in general prevent the complications of uncontrolled hypertension. The hypertension of each patient is an individual problem; a drug which may be used successfully for one patient may be wholly useless for another. Dosage varies widely. Unfortunately physicians tend to prescribe an antihypertensive drug and ignore the situation subsequently. This is bad therapy. The alert and skilled physician will persist in treatment; he changes medication and dosage until the hypertension is adequately controlled or until it is clear that medical treatment is valueless. Adequate treatment for hypertension requires co-operative patients and interested, informed and persistent physicians.

Drugs which reduce blood pressure in essential hypertension although they do not do this uniformly are: (1) *Veratrum viride* (example, proloveratrine); (2) *Rauwolfia serpentina* (examples, Serpasil and Raudixin); (3) ganglion blocking agents (examples, dibenzylamine, hexamethonium chloride and pentapyrrolidinium) and (4) potassium sulfocyanate. They are all useful in treating hypertension.

No preparation has effects solely on blood pressure; they may cause distressing symptoms (which may be alleviated or prevented by appropriate treatment or provoke serious complications as, for example, lupus erythematosus).

No physician should use antihypertensive agents

unless he has knowledge of their effects. The informed physician will be rewarded by doing a good job in the treatment of a disease which all too frequently is a serious one.

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# IMMEDIATE BLOOD REPLACEMENT IN OBSTETRICAL HEMORRHAGE

IN THE last annual report of the Minnesota Maternal Mortality Committee,<sup>2</sup> there were thirteen maternal deaths from post-partum hemorrhage (1951). That this is the greatest single cause of maternal mortality is pointed out by James J. Swendson<sup>4</sup> in an editorial in the March 1954 issue of *Minnesota Medicine*, in which he states, "it is a matter of concern that blood replacement is still often too little and too late."

With the increasing availability of blood during this past decade, largely accelerated through blood bank programs, the number of maternal deaths due to hemorrhage has decreased remarkably, but it is obvious that we will soon arrive at an irreducible minimum unless the blood bank program is further extended to the delivery room itself. This means maintaining Group O Rh negative blood in a refrigerator in the delivery room at all times for immediate emergency use.

Such a system has prevailed for the past ten years at St. Mary's Hospital in Rochester, Minnesota. Two bottles of Group O Rh negative blood of low anti-A titer are refrigerated on the obstetrical floor. When the blood is sixteen or seventeen days old it is brought back to the surgical section to be utilized before its expiration date. A new bottle of blood then takes its place. The results have been very satisfactory, and it is reported that the transfusion reaction rate is no higher in patients who have not received cross-matched blood than in those who have received type specific cross-matched blood.

In 1950 a similar system was instituted at St. Luke's Hospital, Duluth, Minnesota, and more recently at St. Mary's Hospital of the same city. To the writers' knowledge, at the present time, there are but two delivery-room suites in the Twin City Hospitals that are so equipped. Group O Rh negative blood is available at other hospitals but is not kept in the delivery room. In many instances, there is unavoidable delay in

obtaining it from the laboratory, particularly at night: i.e. the night supervisor must be called to unlock the laboratory door, blood is located with difficulty by changing personnel, and so forth. In some instances, night technicians must even be called from their homes so that their travel time is superimposed upon the time involved in cross-matching.

That all obstetrical patients should have blood typing and Rh determinations prior to delivery is an accepted requirement of pre-natal care. We readily concede to the argument that most obstetrical emergencies can be anticipated in time to allow for the routine cross-matching and the use of type specific blood. That this is a far safer procedure and much to be preferred is obvious, but there is also the occasional unanticipated and exsanguinating hemorrhage in which seconds lost in replacement of blood may mean serious damage from shock and even death.

Patton<sup>3</sup> has emphasized the fact that in small hospitals a Group O blood bank is adequate, using only O positive and O negative blood without cross-matching. Blood is preserved in ACD solution (citric acid, sodium citrate, and dextrose) and may be used up to twenty-one days after it is drawn. It is interesting to note that in his experience the incidence of transfusion reaction was less with the uncross-matched blood than when the type specific cross-matched blood was used.

Cole<sup>1</sup> of Cornell University, has pioneered this problem of early and adequate blood transfusions in obstetrics, and as early as 1947, he urged the immediate availability of Group O Rh negative blood in every delivery room. With the application of this policy in 68,000 deliveries at the New York Lying-In Hospital from 1944 to 1949, only one private obstetrical patient died of hemorrhage. We note that in 80,000 deliveries in Minnesota during 1951 there were thirteen hemorrhagic deaths.

We Minnesota obstetricians may well be proud of our low maternal mortality rate of .45 deaths per 1,000 live births. But as long as there is a single preventable death due to hemorrhage we are guilty of laxity. Medical centers throughout the country are now providing immediate blood replacement, as well as a recovery room for obstetrical patients. If Minnesota is to maintain its leadership in the reduction of maternal mortality, we must strive to attain equal or higher standards of medical care. It should not be neces-

sary to lose one of our own obstetrical patients to spur us into action.

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2. Maternal Mortality Committee, Minnesota State Med. Assn.: Minnesota maternal mortality study. *Minn. Med.*, 37:131-135, 1954.
3. Patton, George D.: Operation of a Group O blood bank. *Am. J. Obst. & Gynec.*, 59:693 (March) 1950.
4. Swendson, James J.: Maternal mortality factors. *Minn. Med.*, 37:212, 1954.

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### ROUTINE CHEST X-RAY EXAMINATIONS IN HOSPITAL ADMISSIONS

THE HOUSE of Delegates of the Minnesota State Medical Association at its 100th Annual Session, May 17, 1953, acting upon the recommendation of its committee on tuberculosis, approved the following recommendation:

"Approval of a program of routine admission chest x-rays to be instituted in all hospitals in the state with the stipulation that methods of initiation of such a program be decided by the roentgenologist, the staff, and the administrator of the individual hospital."

Here again, medicine in Minnesota reiterates one of its early fundamental principles, "that the practice of medicine includes both preventive as well as curative medicine." The family physician here is, as he should be, the keystone in planning for better health in his community.

The role of the official and voluntary health agencies has become increasingly that of assisting and supporting the physician in carrying out his responsibilities in the field of preventive medicine through assistance in program planning and in development of facilities at the community level. Admission x-ray procedures now have the endorsement of many organizations interested in the health of the individual and the community, including the American Medical Association, the American Hospital Association, the American College of Radiology, the American Public Health Association, the American Nurses Association, the National Tuberculosis Association, the American Cancer Society, the American Heart Association, and the Minnesota chapters of each of these societies.

When programs were first developed to meet the problem of finding and assisting in the diagnosis of early tuberculosis, it was discovered that

of procedures available, the x-ray was the one most easily applied for mass use. As a result, since World War II, when equipment became readily available, the mobile photofluorographic x-ray unit became a very useful tool in the detection of many previously unknown cases of tuberculosis through surveys of the adult population of entire communities, cities and counties. In addition, it served to develop a recognition on the part of the public of the importance of such procedures.

What is equally significant is the fact that the public as well as the medical profession came to recognize that an equal or even greater number of significant nontuberculous conditions were also found by such procedures. This is all the more significant these days when heart disease and cancer of the lung are assuming such important roles in public health. Unquestionably, this condition was a factor in the recent recommendation of the American Cancer Society that all men over forty-five years of age have a chest x-ray examination at least once every six months.

The development of routine chest x-ray examination in hospital admissions has still greater significance in view of the retrenching action of Congress during the past year in reducing federal appropriations in the field of public health and specifically in tuberculosis control. A severe reduction in the federal funds for tuberculosis control places the Minnesota State Board of Health in a position where it can no longer continue the operation of its three mobile photofluorographic units.

These units were taking approximately 180,000 x-ray pictures of Minnesota's population annually. In comparison, hospital admissions in Minnesota's 193 general hospitals total approximately 450,000 annually.

Routine hospital admission x-ray examinations disclose more than twice as many pathologic conditions in the chest as does the routine chest x-ray examination of the apparently well adult population. In Minnesota this procedure has additional importance to the hospital, in that the compensation laws of the State of Minnesota specifically provide that employees of sanatoria or institutions of the state, or any county, or municipal subdivision of the state, who contract tuberculosis while in the employ of such institution or subsequent to such employment, are entitled to care and compensation. This means that the hospital must pay for the entire sanatori-

um care of the employe and for three-fourths of his wages during the entire period of his disability. The courts in Minnesota, by their action have indicated that employes of all other hospitals and institutions are entitled to the same protection.

Many hospitals in Minnesota are already using the routine chest x-ray examination in all hospital admissions of adult patients. Experience indicates that in no instance where such routine procedures were instituted have they ever been discontinued. Charges for such services meet with general acceptance from both the patients and insuring agencies. For the cost involved, it is the most productive and economical of all hospital routine laboratory procedures. Staff members also find that, as a result of these programs, patients more readily accept the inclusion of the routine chest x-ray examination as part of a physical examination and evaluation in the hospital and the physician's office.

The establishment of such programs is a complicated procedure and varies with the number of admissions to the hospital. Detailed information is available from the agencies, both official and unofficial, which are endorsing and supporting this type of procedure. Voluntary agencies have contributed financial support for these programs, and it may be safe to assume that they would welcome the opportunity to assist in the planning and development of a local hospital admission chest x-ray service.

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#### ADMINISTRATIVE EXPERIENCES WITH ROUTINE CHEST FILMS

FROM an administrative point of view, the policy of requiring routine chest examinations on admission to the hospital, as well as on entering the employment of the institution, presents no insurmountable difficulties. This journal\* has given a detailed account of the setting up of such a routine in a long-existing hospital.

Space limitations forced us to choose for the photoroentgen unit a room some distance from the admitting office. This was a disadvantage while we were attempting to cover the service with admitting office personnel. It was soon found essential, however, to have a technician on hand during routine admission hours. Except for ob-

stetrical cases and emergency, few patients are now missed on admission. Excellent co-operation from the obstetrical floors makes possible the x-raying of all their patients within forty-eight hours because of early ambulation.

The overall picture shows 85 per cent success in getting all patients x-rayed. This administrator will never be satisfied that there is adequate protection of personnel or other patients until the score has reached 100 per cent. The short-stay cases are probably the greatest weak spot. At the same time potential exposure of personnel is least protracted in this instance, a circumstance which allays our fears to a small degree.

In any new hospital program some medical staff opposition is to be expected. The doctors responsible for inaugurating the program at St. Joseph's are to be congratulated on their skill in the laying of the groundwork for acceptance of the plan. Only a minimal number of objections were made to the administrator. These were on the basis of "taking away work from the doctor's office". When it was pointed out that only rarely would the chest x-ray be indicated in the doctor's office and that he would in all likelihood send the patient into the hospital with orders for a standard film, objections ceased. Since no small film would be taken under these circumstances, the patient would have the same expense as before the introduction of the routine chest film on admission.

A word should be said about the advantage of using the photoroentgen unit for screening all employes, students, house staff—in fact all who come in contact with the patients. We have found the unit to be a tremendous saving in this regard, while it creates a feeling of security in the face of the ever-present problem of hospital liability. The very convenience of the unit makes it readily acceptable to new and old employes.

Three years' experience has given ample evidence of the indispensability of the routine chest film program. Tabulated summaries of results such as the one given in the article referred to above may be duplicated wherever the plan is being used. The administrative and medical staffs of St. Joseph's Hospital are convinced of the solid merits of the policy of requiring routine chest films.

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# Medical Economics

Edited by the Committee on Medical Economics  
of the  
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George Earl, M.D., Chairman

## TOTAL OF LICENSED DOCTORS ESTABLISHES RECORD

According to a recent report on medical licensure of the Council on Medical Education and Hospitals of the American Medical Association, an all-time record number of physicians were licensed. A total of 218,522 physicians were licensed to practice medicine in 1953.

The report states that "of this total, 156,333 were engaged in private practice, 6,677 were engaged in full-time research and teaching and were physicians employed by insurance companies, industries and health departments, 29,161 were interns and residents in hospitals and those engaged in hospital administration, 9,311 were retired or not in practice, and 17,040 were in government service.

### Net Gain Noted

The data presented in the report showed that last year 7,276 physicians received their first license to practice medicine. In the same period there were approximately 3,421 deaths of physicians reported, thus showing a net gain of 3,855 in the physician population of the country and its territories and outlying possessions. This compares with the net gain for 1952 of 2,987.

From 1935 through 1953, the report stated, a total of 207,744 licenses to practice medicine was issued in the United States. During the same period there were 119,510 additions to the medical profession—an increase reflecting accelerated programs in medical schools, expanded facilities, and the licensure of foreign trained physicians.

### Schools Rated Excellent

The report emphasized that the excellent rating of the nation's and Canada's approved medical schools was pointed up by the number of applicants who successfully passed examinations. It noted:

July, 1954

"Thirteen per cent of the total number of applicants who took written examinations for licensure failed. . . . Only 3.8 per cent of the graduates of approved medical schools in the United States and 4.1 per cent of those of approved Canadian medical schools failed. In contrast, 50 per cent of those graduated from now extinct medical schools in the United States failed, as did 45.5 per cent of the graduates of foreign medical faculties, 70.2 per cent of graduates of unapproved U. S. medical schools no longer in existence, and 13.4 per cent of graduates of schools of osteopathy."

### Reviews Foreign-Trained M.D.'s

The report also revealed that in many states the licensure of foreign trained physicians has been given serious consideration by the authorities and that methods are being developed to provide for the licensure of such physicians which will not lower the standards of medical practice in the United States. Several groups, such as the Council itself, the Association of American Medical Colleges and the Federation of State Medical Boards, are now engaged in discussions looking toward a re-evaluation of the problem created by the influx of foreign-trained physicians migrating to the United States to pursue their profession.

The report traces the increase in foreign-trained physicians thusly:

"The number of graduates of foreign faculties of medicine examined began increasing in 1936, and by 1940 there were over three times as many tested as in 1936. . . . Beginning in 1944 the numbers examined began to decrease until 1951, when there was a noticeable increase, an increase again recorded in 1952 and 1953.

"During 1953, 1,463 graduates of 175 foreign medical schools and seven licensing corporations of foreign countries were examined by 36 licensing boards. A total of 796 successfully passed the examinations; failures numbered 667, or 45.5 per cent. At no time during the last 24 years did fewer than 30.7 per cent of such graduates fail in a given year. . . .

"This extremely high percentage of failures is a primary factor in the cautious attitude that has been main-

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tained by licensing boards in admitting foreign graduates to the licensing examination," the report said.

Breaking the figures down by states, the report noted that the largest number of foreign graduates were examined by New York—450; Illinois examined 411, California 148, and Ohio 105. Foreign-trained physicians may apply for licensure to all but 11 licensing boards; most boards have stipulations which must be complied with prior to licensure examination, the report concluded.

### Few Doctors Retire

Another report, issued by the Bureau of Medical Economic Research of the American Medical Association, has some relation to the above statistics. This report shows that 84.2 per cent of the physicians in the 65-74 age group were in active practice of medicine. There were, in 1950, 22,296 physicians in that age group, with 18,770 in active practice, according to the report.

The *Journal of the AMA* commented editorially on this information in a recent issue:

"Only 15.8 per cent were not engaged in active private practice. Among these 3,526 not in active private practice were housewives and others who had practiced for only a few years, if any, and several hundred who were still employed by private or public employers; still others had retired from private or public employment, probably on a pension financed in whole or in part by the employer. . . .

"If the pattern of 1950 is continued, eight or nine physicians out of 10 would be required to pay social security taxes but would receive no pension from age 65 to 75."

### HOSPITALS SHOW ADMISSIONS INCREASE

A new record was set by American hospitals in admissions during 1953. According to the thirty-third annual report on hospital services of the AMA's Council on Medical Education and Hospitals, 19,869,061 patients were admitted, compared with 18,914,847 in 1952. A continued increase in the volume of hospital services was noted in the report. It states: "For the second time in history, the number of hospital births exceeded the three million mark—3,307,182 in 1953 as compared with 3,170,495 in 1952. This represents approximately 84 per cent of the estimated 3,910,000 annual births in the United States."

Other highlights of the report were:

1. 6,840 hospitals registered by the American

Medical Association—2,136 classified as governmental and 4,704 as nongovernmental.

2. Gains in patient admissions noted in both groups but more pronounced in the nongovernmental division credited with 74 per cent of all admissions.

3. Bed capacity in registered hospitals increased by 31,399 over the previous year with a total of 1,573,014—1,113,004 in governmental and 460,010 in nongovernmental hospitals.

4. Average length of stay per patient was reduced in general hospitals from 9.8 to 9.3 days. Also included in this group are federal general hospitals which showed a reduction from 26.2 to 23.6 days.

In addition, the report states, many registered hospitals are supporting educational activities connected with training of interns, residents, student nurses, technical and other hospital personnel. 850 hospitals approved for internships; 1,146 for residencies, and 1,071 for professional nursing education.

### NEW PAMPHLETS NOW AVAILABLE

Available in quantity from the State Office, 496 Lowry Medical Arts Building, St. Paul, are four new pamphlets suitable for doctors' offices or for distribution.

The pamphlets cover various aspects of medical public relations, and include one on research, one on choosing a family doctor before illness strikes, one on how the AMA stands guard behind the doctor's prescription, and another on warnings about healers who guarantee cures. Physicians may order these pamphlets by writing to the above address.

### MATCHING INTERN PROGRAM EXPLAINED

A recent Secretary's Letter from the American Medical Association carries an explanation of the purpose, attitude and philosophy of the National Intern Matching Program which has now been operating for three years. In order to explain how the program works and its purpose, the following information was submitted:

"The National Intern Matching Program has now completed three years of successful operation. This agency is operated jointly by the AMA, the hospital associations and the Association of American Medical Colleges. Its sole purpose is to facilitate the orderly

placement of senior medical students in first-year internships.

"The plan preserves in the American tradition free choice by both hospital and student as well as their bargaining rights. It does not interfere with, but gives effect to the expressed preferences of both groups. The program does not approve, restrict, or in any way control the internships offered by hospitals. It does not allocate interns. Each student gets his most desired internship if that hospital wants him. Each hospital gets every man that it wants, up to the number it specifies, who wants to go there."

## SECOND SCHOLARSHIP AWARDED IN DULUTH

The second annual Rural Medical Student Scholarship of the Minnesota State Medical Association was presented to Leland R. Christenson of Marshall, Minnesota, at the annual meeting in Duluth on June 8, 1954.

The award, begun last year by the Association, is given with the stipulation that the recipient spend the first five years of his practice in a Minnesota community of 5,000 population or less.

The 1954 award was presented at the annual banquet by Dr. F. J. Elias, chairman of the Association's Rural Medical Student Scholarship Selection committee. In presenting the scholarship to Mr. Christenson, Dr. Elias said, in part: "... we are pleased to know that this young man will be joining our ranks soon. The very fact that we have made this scholarship available, and have seen that the best qualified student should receive it, evidences our faith in the youth of this state."

## FILM ON ALCOHOLISM ADDED TO AMA MOTION PICTURE LIBRARY

Case studies of three types of alcoholics tracing the development of the disorder from origin are incorporated in a motion picture film which recently was added to the AMA's Motion Picture Library. Entitled "Alcoholism," this film attempts to show how the roots of this illness are imbedded personality difficulties often relating back to the formative years of the victim's childhood and how it can be treated through psychology. This black and white, sound, 22-minute film may be obtained from the Committee on Medical Motion Pictures for a service charge of two dollars.

JULY, 1954

## MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building  
Saint Paul, Minnesota

E. M. Jones, M.D., Secretary

## CALIFORNIA MAN GIVEN WORKHOUSE TERM IN MINNEAPOLIS FOR ABORTION

*Re: State of Minnesota vs. Vern E. Jorgensen*

On June 3, 1954, Vern E. Jorgensen, forty-one, 543 Eureka Street, Lodi, California, an employee in a liquor store there, was sentenced by the Hon. John A. Weeks, Judge of the District Court of Hennepin County, to a term of not to exceed eight years in the State Prison at Stillwater, following his plea of guilty to an information charging him with the crime of abortion. The sentence was stayed, however, and the defendant placed on probation for a period of three years, provided that he serves the first year in the Minneapolis Workhouse, and in addition pays the sum of \$1,000.00 to the probation officer of Hennepin County. Out of that money, \$700.00 is to be paid to Hennepin County and \$300.00 to the Minnesota State Board of Medical Examiners to defray the expenses of apprehending the defendant who fled Minneapolis last August. Just prior to being sentenced, Jorgensen admitted having been previously convicted of a felony. On February 5, 1948, he was convicted on an abortion charge in the District Court of Hennepin County.

In the present case, a complaint was issued on August 19, 1953, in the Municipal Court of Minneapolis charging the defendant Jorgensen and Lillian M. Mullane with the crime of abortion, following the hospitalization of a 26-year-old Minneapolis divorcee in General Hospital who was ill as the result of having submitted to a criminal abortion. She had paid \$150.00 for the abortion. Mrs. Mullane, who acted as the contact between Jorgensen and the patient, was arrested and subsequently sentenced to serve a two-year term in the Women's Reformatory at Shakopee. Although a warrant was issued for Jorgensen's arrest, he was not apprehended until last April, at which time he was located in Lodi, California, where he was arrested on April 26, 1954.

Both Jorgensen and Lillian M. Mullane, fifty-seven, 9949 Maple Avenue, Bloomington, Minnesota, were previously charged with the crime of abortion in another case in the District Court of Hennepin County and on February 5, 1948, each was sentenced to a state penal institution. The defendant Mullane was required to serve part of her sentence in the Minneapolis Women's Detention Home. Jorgensen was placed on probation. Although neither of them has had any medical training of any kind, in 1947 Jorgensen posed for several months in Minneapolis as "Dr. Vern Roberts."

The Minnesota State Board of Medical Examiners wishes to express its appreciation for the splendid cooperation given in this case by Mr. Michael J. Dillon, County Attorney of Hennepin County, and also for the extra effort put forth by the Minneapolis Police Department under Chief Thomas Jones.

# The Dean's Page

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## SOME WISE WORDS FROM DOCTOR BELL

Last month the Seniors about to graduate from the Medical School, were guests at a luncheon sponsored by the Minnesota Medical Alumni association. An annual event, the luncheon serves to introduce the students to the alumni association and its activities.

Officers of the alumni group asked Dr. E. T. "Tommy" Bell, our beloved Emeritus Professor of Pathology, to talk to the students briefly on this occasion. His simple, wise, and sincere words were an inspiration to all who heard them. All of us—students, practitioners, teachers—would do well to study them not once but repeatedly. In order that those who did not have an opportunity to hear him may read his comments, Dr. Bell has agreed to let them be recorded on this page. The following then is a direct quotation from Dr. Bell's address to members of the 1954 Senior Class in Medicine.

"Your long course of training has been completed, and you are now ready to start out in life. This is a happy day for you and also a serious day, because you must now assume responsibilities that are new. Although I have taken no part in your education, I still feel almost as much interest and pride in you as I have had in classes which I helped to educate. I think I shall always feel the same way about Minnesota graduates.

"What I say to you is given in the spirit of a father counseling his son when he leaves home to start out in life. Be honorable and true to the best standards of our noble profession.

"The Hippocratic oath is a solemn promise which has guided the best men in our noble profession for over 2000 years. Translated into compact modern language it means that you pledge yourselves to rigid honesty in the practice of medicine. It means that you will treat your patients to the best of your ability, that you will not neglect them or do anything not in their best interest.

"Your patient puts his health and even his life in your hands. You must justify his confidence and faith.

"You have a debt to society. The actual cost of your four years of training to the people of Minnesota is \$12,000. Colorado charges the State of Wyoming this amount for training their students (\$3,000 per year). You have paid only about 10 per cent of this cost. You were selected from many applicants because of superior scholarship. A great many young men and women were denied the opportunity to study medicine because of our limited facilities. This is another cogent reason for you to do your best.

"Your skill in the diagnosis and treatment of disease should increase with your years of experience, but you must work continuously for greater knowledge and skill. You must study all your life. You will never be too old to learn. Any older doctor will tell you that the greater part of his knowledge was acquired after graduation. Medicine is moving forward rapidly. You must keep up with the procession. The doctor who quits studying soon falls behind. What would a doctor be like today if he practiced with only the knowledge we had twenty or thirty years ago?



## THE DEAN'S PAGE

"Read medical journals, attend medical meetings whenever possible. Find time for an occasional postgraduate course. The practice of medicine is a pleasure to the man who understands what he is doing. The incompetent man gets only frustration.

"The field of medicine is now so great that no man can possibly recognize and treat all the infinite varieties of disease. If you wish to practice a specialty, a minimum of three years of postgraduate study is necessary. But you cannot all be specialists. There is a great demand for general practitioners. The people of the state resent the fact that we do not produce more men for general practice. They threaten us with socialized medicine if we don't fulfill this demand.

"General practice is a very satisfying career. If you expect to do general practice, which we hope most of you will undertake, a two-year internship with emphasis on internal medicine is excellent preparation. If you practice alone you will probably need consultation on at least 10 per cent of your more serious cases. Practice is much more satisfactory if you can take your serious cases to a hospital where x-ray and laboratory facilities are available.

"A satisfactory way to practice is to work in a congenial group or clinic and subdivide the work. In this way one need not cover so many fields.

"The old horse-and-buggy doctor didn't do much for his serious cases, but the people loved him. You can learn from him a very important lesson, that is, that personal interest and sympathy play a very important role in satisfying your patients. Be a human doctor, not an ivory tower man or a machine. You and I would go to the most competent man regardless of how he treated us, but the patients want sympathy and understanding.

"The practice of fee-splitting, or kickbacks, is a disgrace to our profession, and the few men who do this, discredit the rest of us. The doctor who wants a split-fee usually sends his patient to the surgeon who gives a kickback, not to the best surgeon. As his conscience weakens, he sends patients who do not need an operation. This practice is a violation of basic human rights. If your patient is seriously ill and you do not understand the nature of his illness, get the best consultation available. Remember that the patient's life may be at stake, and that a specialist might save him.

"One of the greatest evils in the medical profession today is unnecessary surgery. This has even attracted national attention. Thousands of normal organs are removed every year in Minnesota alone. The sinners are chiefly men who have had no formal training in surgical diagnosis. They have forgotten the Hippocratic oath and operate for a fee.

"Do not undertake any operation that you can't perform, and do not recommend surgery unless you think the patient needs it. Men who are thoroughly trained in diagnosis are seldom dishonest. They simply can't do things they know are wrong.

"In summary, my advice to you is to be competent and honest. Be human. Justify the confidence and trust of your patients. Follow the golden rule. You won't be happy unless you enjoy your work, and you won't enjoy it unless you are competent. We are proud of you as our boys and girls, and we have every confidence that you will reflect honor on the University of Minnesota. God bless you!"

HAROLD S. DIEHL, M.D.

*Dean of the Medical Sciences  
University of Minnesota*

# Minnesota Academy of Medicine

Meeting of October 14, 1953

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 14, 1953. Dinner was served at 7 o'clock, and the meeting called to order at 8:10 p.m. by the President, Dr. E. A. Regnier.

There were forty-two members and one guest present.

Minutes of the May meeting were read and approved. The President announced the death of Dr. A. E. Benjamin, for many years a member of the Academy. The scientific program followed.

DR. EJVIND FENGER, Assistant Medical Director of Glen Lake Sanatorium, read his Inaugural Thesis.

## THE NECESSITY FOR TEAMWORK IN THE MODERN TREATMENT OF TUBERCULOSIS

EJVIND FENGER, M.D.

Oak Terrace, Minnesota

Of all the many statements made by Sir William Osler on the subject of tuberculosis, perhaps the most often quoted is this: "It is just as important to know what is in a man's head as what is in his chest, if you want to predict the outcome of his pulmonary tuberculosis." Long before the advent of the term psychosomatic medicine, it was known that not only physiological characteristics, but environmental factors and psychic reactions contribute to the tuberculous patient's progress. These social and psychic factors were considered a phenomenon of the disease.

As understanding grew, the physician realized that his clinical treatment had to be supplemented by other than purely medical services. It was the whole man who had to be cured.

This idea is developed in an interesting way in a recent book by Dr. Rollo May, *MAN'S SEARCH FOR HIMSELF*, in which he says, "It is not the attitude of 'My body feels' but 'I feel.' The old expression 'I sicken' is accurate. Fortunately in at least one disease the active verb is still used for the process of getting well—tuberculosis patients say 'I cured' at such and such a sanatorium. We propose that illness, whether physical or psychological, be taken not as periodic accidents which occur to the body, but as nature's means of re-educating the whole person." He goes on to say, "We may add that it is an actual clinical fact that some persons, viewing their illnesses as an opportunity for re-education, become more healthy both psychologically and physically, more fulfilled as persons after a serious illness than before."

Perhaps this is more true of tuberculosis than most diseases. It is the basic idea on which all the services of the modern sanatorium are built, and it is also the basis for the subject which I wish to discuss with you—The necessity for teamwork in the modern treatment of tuberculosis.

The sanatorium movement began with the idea of isolating the open case after the private physician had made the diagnosis. Once isolated, the patient could be conveniently ignored; treatment was bed rest, fresh air,

food, and finally gradual ambulation. Most sanatoria were small, poorly staffed, and in many respects just rest homes.

Experience and medical advances have painted a very different picture today. Diagnostic surveys ferret out asymptomatic cases. Treatment is varied, with drugs and surgery playing a prominent part. The modern sanatorium is a well-equipped hospital. Realizing that personal, social and vocational adjustments are essential to arrest the disease and avoid relapses, administrators augment the non-medical staff with social workers, occupational therapists, vocational counsellors, teachers and librarians.

This paper is devoted to an analysis of the teamwork at Glen Lake Sanatorium, Minnesota, presentation of an illustrative case, and discussion of needs for greater integrated effort in some aspects of tuberculosis care.

Glen Lake Sanatorium staff may be divided, for convenience, into three general categories, medical, social service, and vocational rehabilitation, with considerable inter-departmental co-operation. The maintenance staff is, of course, just as essential to the team, but it will not be discussed in this paper. There are 626 employees in all for 619 beds, with operational expenses per patient of \$13.00 per day.

### Medical

The medical department is a vastly more complex organization than in the days when tuberculosis was isolated and ignored. Diagnosis has spread its fingers into the "normal" community, with tuberculin testing in the public schools and by the private practitioner and roving x-ray survey units. Public clinics maintained by the Health Department, sanatoria, and charity hospitals, and the practice of taking admission chest films at all hospitals have aided in earlier detection. Glen Lake Sanatorium's 1951 admissions came from: the Public Health Center's daily chest clinics (41 per cent), private practitioners (30 per cent) and other hospitals (22 per cent). Out of 444 admissions in 1952, seventeen were discovered by survey methods.

## MINNESOTA ACADEMY OF MEDICINE

On admission, the case is assigned to one of five teams of three doctors each, which is responsible for the patient's care throughout his stay, but major decisions are made by the entire staff at weekly conferences. Each of the teams is also responsible for some special field of tuberculosis care, such as orthopedics or bronchoscopy, and there is free use of outside specialists. Consultation totals for 1952 include orthopedist 510, urologist 356, cardiologist 211, and frequent referrals to dermatologist, psychiatrist, ophthalmologist, and gynecologist. Two dentists give full-time service.

Laboratory and pathology facilities are well developed at Glen Lake (smaller institutions obtain some services from state laboratories). X-ray employs three full-time technicians and additional aides, with a radiologist reading each film. Equipment is available for stratigrams, stereoscopic views, and fluoroscopy as well as the usual chest films. Audiograms regularly check streptomycin's toxic effects.

Since a large proportion of patients now undergo pulmonary resection (resections in 1952 totaled 168), the surgery team compares with that found in general hospitals. We have two chest surgeons who operate several cases each week. Work-up includes development of some exercise tolerance, evaluation and correction of fluid-electrolyte and nutritional disturbances, the usual blood studies, crossmatch for transfusion, vital capacity and electrocardiograms for all patients and bronchoscopy for most. In 1952, 195 bronchoscopies and forty-three bronchospirometries were completed. A skilled anesthesiologist is available for all major surgery. Post-operative care essentials are: modern recovery room techniques, early emphasis on arm exercises preventing stiffness and pain, and close attention to the patient until suction drainage tubes are removed. Complete microscopic and bacteriological studies are performed on all surgical specimens. A state law passed in 1941, provides for transfer of surgical patients to sanatoria with these facilities when home institutions lack them.

A preventive program of B.C.G. vaccine inoculation is conducted at the sanatorium. All employees must have positive Mantoux reactions; non-reactors are given B.C.G. Selected children of positive sputum patients, who have had or will have heavy exposure, are tested and vaccinated at the institution.

The medical staff is active in clinical research, now they are participating in a United States Public Health study of chemotherapy, and completing a survey of bone tuberculosis cases from 1928-47. Frequent panel discussions and lectures by distinguished visitors provide new ideas and test old ones.

Over-all policies are reviewed at monthly staff meetings. The medical staff also sits with the education committee, approves rehabilitation programs, prescribes occupational therapy, helps with nursing education, gives radio talks, and contributes articles for the monthly newspaper published by the patients.

The nursing staff is composed of registered nurses on all floors in the daytime, with practical nurses on non-critical floors at night, supplemented by practical nurses, aides and janitor-orderlies. The practical nurses and aides are carefully trained in isolation technique and the

details of tuberculosis care. By affiliation, student nurses from several teaching hospitals receive instruction at Glen Lake.

While all facilities in the state are not equally well developed, there is increasing effort to offer modern care everywhere. The Minnesota Tuberculosis and Health Association conducts clinics, helps with public education, and provides diagnostic surveys in unorganized counties. The Minnesota Trudeau Consultation Committee visits sanatoria on invitation, to offer help in the diagnosis and treatment. Transfer of patients needing special diagnostic studies or surgery is freely arranged, with the method of financial adjustment set by law.

If the patient is referred to Glen Lake Sanatorium by a private physician, the physician is supplied with a case summary soon after the patient's admission, and urged to visit and consult with the staff. When the patient is discharged, a summary of his stay at the sanatorium is sent to the physician together with suggestions for frequent x-rays, rigid control of activities, to avoid exceeding exercise tolerance, and regularity in work, play and rest. If the patient's tuberculosis was service-connected, on discharge he is referred to the Veterans' Administration Out-Patient Department for follow-up. Charity hospital, Public Health Clinic, and non-service connected veteran referrals are followed at the Glen Lake Out-Patient Department where daily chest clinics are offered, pneumothorax refills done, occasionally drug therapy is continued, and physical examinations, x-rays, and laboratory work ordered regularly.

### Social Service

A full case work staff is employed to handle the many problems resulting from the lengthy hospitalization and uncertain future of the tuberculosis patient. Glen Lake Sanatorium proper hires a director, four case workers, clerical workers and patient-employees to assist with office work and special services. The case load per worker is about 135. The out-patient clinic includes a director and a financial and residential investigator, three case workers, and a large clerical staff.

Social Service performs six major functions: (1) assistance in personal adjustment, (2) interpretation of the disease to patient, family, and community, (3) utilization of available social agencies and other community resources to help the patient and his family, (4) interpretation of other sanatorium services to the patient, (5) dissemination of pertinent social information to medical, nursing, education, vocational and occupational therapy departments, and (6) maintenance of religious services, entertainments and other morale-building features.

When the diagnosis of tuberculosis is made, the Financial and Residential Investigator makes a home call to establish eligibility, discuss financial plans, and explore resources for care of the family after the patient is hospitalized. Additional interviews with insurance company or employer may be necessary. Immediate referral to pertinent social agencies is then made, the information is reported to the Finance Board and the case worker at the sanatorium, and formal application is filed.

## MINNESOTA ACADEMY OF MEDICINE

A public health nurse visits the patient's home to discuss the limitations tuberculosis imposes upon the family and to relay information on obvious social needs to the social service department.

Soon after the patient's admission, the case worker takes a personal and family history, explains sanatorium services, and discusses problems resulting from hospitalization. Contact continues throughout the patient's stay as problems arise.

A large part of the case worker's day is spent interpreting the disease to patient and family and interpreting the patient's social needs to the rest of the team. The case is discussed with the doctor, arrangements are made for conferences between the doctor and the patient's family, and conferences are held with other departments. In co-operation with the nursing staff, a co-ordinated effort is made to teach the patient about tuberculosis using interviews, booklets, questionnaires, nurse teaching, special articles in the sanatorium paper, lectures over the sanatorium radio station, and conferences to clarify medical problems as they arise.

Another large segment of the case worker's day is spent integrating the patient's care with other agencies. The most frequent participants are the Hennepin County Welfare Board for Aid to Dependent Children and Old Age Assistance, city relief department for family and individual help, private agencies such as Catholic Welfare Association, Family and Children's Service, and Jewish Family and Children's Service, and various health agencies and hospitals. Other agencies contacted frequently in the last six months include: Minnesota Society for Crippled Children and Adults, Minnesota Society for the Blind, Minneapolis Society for the Hard of Hearing, Legal Aid Society, American Red Cross, Minneapolis Church Federation, Hennepin County Court Commissioner, Division of Social Welfare, Hennepin County Probation Office, Immigration Department, State Board of Parole, Police Department, County Sheriff's Office, State Department of Veterans' Affairs, State and Federal income tax agencies, insurance agencies, Railroad Retirement Board, county welfare boards, and the Division of Vocational Rehabilitation of the State Department of Education.

The social work staff is directly concerned with providing weekly church services, weekly movies, special entertainment features such as the annual Shriner's Christmas party, shopping service, and supervision of visiting children. The department also advises the Trudeau Club, an organization of patients which publishes a monthly paper, arranges radio programs, sounds patient opinion on entertainments, and arranges picnics, parties and table decorations. Volunteer groups are supervised and provided with visitors' lists, and gifts are acknowledged and allocated.

Many months prior to discharge, plans are made for transfer of homeless patients to Sarahurst Boarding Club while they train or search for a job, investigation of housing facilities by a public health nurse with attempts to make necessary improvements, and referral to various social agencies for continued aid until the patient and his family are self-supporting. Post-discharge medical care is discussed with the patient and a social

summary is sent to the Out-Patient Department and Veterans' Administration.

A staff of case workers at the Out-Patient Department continues social work started at the sanatorium, providing new services as the need arises. The services of the out-patient social workers are available to private patients on request, as well as to all patients followed at the out-patient clinics.

### Vocational Rehabilitation

Therapeutic exercise, library service, public school education, occupational therapy, vocational guidance and vocational training are all part of the rehabilitation program.

Therapeutic exercise assignments are clerical work, elevator operation, mail service, switchboard operation, and transportation of litter and wheelchair patients to improve exercise tolerance and re-establish work habits.

Books and magazines are brought to the bedside as soon as the patient is well enough to read or study. There are 8,000 volumes in the library including occupational literature on fifty major work fields and ninety-four circulating magazines.

Occupational therapy begins six weeks after admission with opportunity to do light arts and crafts such as fly-tying, chip carving, needlework and knitting. Later leatherwork, sewing, ceramics and woodworking with hand or power tools is offered. The therapist visits every patient twice a week to promote hospital adjustment, aid in the development of work tolerance, restore lost skills or develop new ones useful in a vocation, and evaluate interests, attitudes and habits.

Bedside and classroom public school instruction is offered from elementary to high school level with special correspondence courses or vocational training arranged as needed. Homemaking and cultural courses are also available.

Vocational rehabilitation proper begins when the patient fills out a Vocational Rehabilitation Survey questionnaire which will reveal: his education, vocational training, former occupation, prospects for future employment and job preferences. The patient's doctor then decides the amount of time that may be safely spent in study. Counselling is provided by a Rehabilitation Coordinator, a worker from the Minnesota Division of Vocational Rehabilitation assigned full time to tuberculosis, and a Veterans' Administration advisor providing counsel for service-connected cases. Psychological testing of learning ability, occupational interests, vocational aptitudes and personality help the patient select his vocational goal.

Representatives of the above services, medical and social service departments discuss a co-ordinated rehabilitation program for each patient at bi-weekly meetings. Special schooling and training is provided as soon as the patient's condition supports it. At discharge, the patient may enter a special technical, trade or professional school sponsored by the Veterans' Administration or the Division of Vocational Rehabilitation. A discharged patient without a home during this training period may live without charge at Sarahurst Boarding Club, operated by the Hennepin County Tuberculosis Association and financed by Christmas Seal funds.



## Case History

J. E., a twenty-four-year-old white, married, truck driver was admitted to Glen Lake Sanatorium June 20, 1951, with pulmonary tuberculosis, moderately advanced.

When he was in the fourth grade a routine tuberculin test was reported positive and six annual x-rays showed stable childhood tuberculosis. At seventeen, he was rejected by the Navy and at eighteen by the Army because of x-ray findings. At nineteen, he began work in Minneapolis as a truck driver. At twenty-one, he was again called by the Army, rejected, and referred for check-up to a clinic in Saint Paul, to which he did not return for follow-up. Information on his status at that time is not available.

At twenty-four he was again rejected by the Army, and a private physician's examination revealed a spread of the lesion, though the patient had no symptoms except a cough productive of one tablespoon sputum daily for one year. He reported one sister with tuberculosis at Sunnyrest Sanatorium, Crookston, Minnesota. He was referred to the Public Health Center where admission to Glen Lake Sanatorium was recommended when it was established that he had been a continuous resident of Hennepin County more than one year. The importance of institutional care in the treatment of tuberculosis was discussed with him and a pamphlet clarified preparations needed before admission. The patient was assured that financial help would be arranged for his wife and child when his insurance benefits were exhausted, and his own care would be free since his savings were small. The financial worker then completed application arrangements and checked with the patient's employer to verify information and collect any benefits due.

Previous to his admission, a public health nurse called and reported that the family was living in a very small apartment with no yard, one child was thirteen months old and another on the way, thus financial aid would be necessary. She discussed tuberculosis with the couple, emphasizing home precautions such as isolation of dishes and use of tissues. Regular checkups for the wife and child at the Public Health Center, with consideration of B.C.G. for the child, were urged.

On admission, J. E. was interviewed briefly at the office, then given a bed in one of the admitting wards. No chest abnormalities were noted on physical examination. Admitting x-ray showed slight scattered infiltration in both upper lobes with no apparent cavities. Stratigrams showed two small cavities in the posterior segment of the right upper lobe, and scattered small densities anteriorly in the left upper lobe suggesting an older process. Sputum smears were negative, but cultures proved positive. Strict bed rest was advised.

The social worker assigned to him took family and personal history, discussed with him the available sanatorium services, and reported that Aid to Dependent Children benefits would go to his wife as soon as insurance ceased. Through the social worker's efforts, the family moved to a new housing project where they had more space and a yard.

Meanwhile, J. E. was learning about tuberculosis and its treatment. He filled out a survey questionnaire and looked up and discussed the questions he missed. Nurses demonstrated techniques for covering cough and sputum disposal, discussed services available, and showed him the limits imposed upon him by the treatment "strict bed rest." He read several booklets and articles in the sanatorium paper on the disease and listened to talks about tuberculosis on the sanatorium station. Thanks to movies, careful room placement, store and library service, he began to feel a little at home. He completed several occupational therapy projects with industry and skill. It was reported he was adjusting to routine well, understanding his disease, taking necessary precautions, and remaining at bed rest.

He filled out a Vocational Rehabilitation Survey form indicating he realized he would need to give up truck

driving and had been promised an office job in the trucking company. The Education Committee reviewed his case, recommending business mathematics, business English and bookkeeping courses while at bed rest, later typing. His doctor predicted probable ultimate full-time work capacity in a sheltered occupation.

In November, 1951, the patient reported to his social worker that his wife was unable to get along on the money allowed her by Aid to Dependent Children, a reduction in income of nearly 75 per cent. This was discussed with the ADC worker who said the patient's wife budgeted money very poorly though advice on realistic budgeting was being given. A conference was arranged with the patient, ADC worker, and sanatorium case worker in which the allowances and limitations of the ADC program were explained. After participating in planning for his family, the patient was less resentful and promised to encourage his wife's budgeting efforts. At that time a special allowance for a baby-sitter was arranged so the wife would be able to visit two to three times a week.

A medical conference called to review J. E.'s progress after six months of bed rest noted some improvement of extent of infiltration and cavity size and decided he should have bilateral resection after four to six months of drug preparation. He was placed on antimicrobial drugs on January 26, 1952. His last positive sputum was found on March 28, 1952. The social worker contacted officials of the truckers' union who agreed to replace all blood used at the time of his surgery.

His total vital capacity just before surgery was 4,000 c.c. with 3,500 c.c. for the first second. On June 18, 1952, he underwent right apical segmental resection. The remaining right lung was grossly free of the tuberculous process. Some apical adhesions required suture to control bleeding after they were divided. The next day hemothorax dictated a thoracotomy to control the bleeding and evacuate clots. No lung bleeding points were found but many clots were removed, an intercostal bleeder was secured and a catheter left in place. The bleeding did not recur, and the patient's condition remained good with generous blood replacement. On June 24, 1952, an intrapleural pocket in the anterolateral right chest was located by x-ray and aspirated, yielding 200 c.c. of light brown fluid. An intercostal catheter was inserted into the space at the right anterior axillary line until drainage ceased. By July 1, 1952, all tubes were out, the lung re-expanded and x-ray showed clearing.

On October 30, 1952, a left thoracotomy was done with the preoperative intention of wedge resection, but extent of nodules on exploration dictated segmental resection of apical posterior and anterior segments of the left upper lobe. The postoperative course was uncomplicated.

The right lung specimen showed one small cavity remaining with scattered fibrous infiltration and nodules, all appearing chronic and inactive. The left lung tissue showed several nodules with no caseation. No acid fast bacilli were seen on sections, and smears and cultures were negative. Strict bed rest was resumed for six months, to be followed by gradual ambulation over an eight- to ten-month period. Total vital capacity eight months after surgery was 3,100 c.c. with 3,000 c.c. for the first second.

After his first resection, J. E. was referred to the Rehabilitation Co-ordinator for more specific vocational planning. Eligibility for re-instatement with the trucking company was verified, the employer recommending bookkeeping instruction and promised opportunity for advancement. The patient was assured that pre- and post-discharge training to qualify him for advancement would be provided. Tests revealed clerical and bookkeeping aptitude. After the second resection, his doctor approved one and one-half hours daily study. He was enrolled in bookkeeping, typing and social studies courses (he had completed his other studies successfully).

In May, 1953, when ambulation was started, J. E. found he had outgrown all his clothes. Replacements

## MINNESOTA ACADEMY OF MEDICINE

from the Sanatorium Clothing Fund were arranged by Social Service.

At present the patient is on four hours' exercise daily, continuing his studies (he plans to start business correspondence when time permits) and is looking forward to traffic school enrollment on discharge. He is asymptomatic, with negative sputum and clear x-rays.

### Weak Links in Teamwork

While teamwork in the modern sanatorium has progressed to an astonishing extent in the last twenty-five years, there is, of course, room for improvement.

The team may overlook personal problems of patients more reticent than J. E. The patient may not understand the social worker's interest in his adjustment, thinking only economic problems are referred to her. Doctors and nurses are available, but may seem too interested in his disease process to discuss emotions. All personnel must be more aware of the devastating personal impact of the disease on many patients, that the unco-operative patient may be unhappy, not "bad," and that only by maintaining a close rapport with patients will emotional problems be brought to light as they arise and thus reduce the number of irregular discharges.

The education of the patient about tuberculosis always seems incomplete, in spite of a well developed inter-departmental program. Nurse teachers must realize many patients do not learn by reading or from one hearing; persistent daily emphasis is needed with repeated survey tests to check for weak spots. One wonders about the advisability of using classroom teaching for patients and perhaps their families, as is done for diabetics in many hospitals. Or perhaps, ambulatory patients might be utilized to help a busy nursing staff in teaching. Review with special reference to patients' own habits in such matters as personal sanitation and strict bed rest should be undertaken at regular intervals. Certainly, the facts needed to live with tuberculosis are few, but these few must be clearly understood and practiced.

Nearly ignored in the vocational rehabilitation program are mothers of young children. Homemaking courses are offered by the Education Department, but little additional individual counselling has been attempted, although the work of a new baby is the villain in many breakdowns. Rehabilitation funds should be available to provide help in especially busy households until discharged patients build up sufficient work tolerance to carry on alone. Case work before and after discharge should attempt to recruit available help to the home so that the mother is assured adequate rest and freedom from strenuous work for permanent recovery.

Certainly the alcoholic, supplied with his bottle by bootlegging friends or businessmen and leaving against advice on this artificial optimism, is not being rehabilitated with the present team facilities. It is to be hoped that funds will be appropriated for detention of these patients (a fifty-bed addition to Anoka Tuberculosis Unit has been suggested), and that when this is available, treatment of alcoholism as well as tuberculosis will be attempted.

Another weak link in rehabilitation teamwork is medical follow-up and supervision of private patients. With routine examination, x-ray and laboratory procedures at chest clinics, it is easier to remember all facets of dis-

charged patient control. The private patient, however, is prone to economize on follow-up visits, and the physician in the press of other responsibilities may fail to look him up. Both clinics and private physicians all too often fail to impress ex-patients with the necessity of a regulated life free from excesses of work or play.

### Summary

The modern sanatorium is an up-to-date hospital, not a rest home, because of the necessity of teamwork in tuberculosis care. The medical staff provides well-integrated general diagnostic and treatment measures, wide consultation service radiology, dentistry, surgical teams trained in chest work, complete laboratory, technical and pathology facilities, skilled nursing, and active research programs. The social service staff provides assistance to the patient in personal and sanatorium adjustment, interprets the disease to patient, family, and community, utilizes community resources to help the patient and his family, and assists with religious services, entertainments, volunteer services, and other morale-building activities. The rehabilitation team provides counselling, aptitude testing, education and training in specific skills needed to hold and advance in a vocation suited to the individual's exercise tolerance on discharge, as well as occupational therapy, public school education, and library service. All these services, in turn, must be carefully integrated by frequent interdepartmental conferences on each patient's special needs and continued by private physician or out-patient departments after discharge.

A case report is presented illustrating the many-sided teamwork needed in the care of a "routine" patient.

Pitfalls in the rehabilitation of the patient with emotional problems, the practical education of patients about tuberculosis, adjustment of young mothers to tolerable work loads, the care of alcoholics, and supervision of discharged patients are briefly discussed.

### Discussion

DR. S. MARX WHITE, Minneapolis: It happens to be my personal privilege to be actively interested in the affairs of Glen Lake Sanatorium for many years—since 1919, in fact. I have seen a remarkable evolution in the care and treatment of tuberculosis. Dr. Fenger has traced this evolution and has made clear to us how many forces play a part in the care of the tuberculous patient and in his restoration to an active life in the community, when this cure has been established.

One problem that plagued us in former years, was that of the patient who left the Sanatorium too soon—thus often only to relapse. The physician who sends the patient to the Sanatorium can be the largest factor in preventing this.

Before our own institution became the effective instrument it is now, I often sent patients to River Pines Sanatorium at Stevens Point, Wisconsin. Before doing this, however, I carefully gave this instruction: The sanatorium is not going to keep you one day longer than necessary. They can fill the bed the day you leave as they already will have an applicant for it. No living person knows the exact day on which your cure is so complete that you will not relapse. It is better to stay a few days too long than to make the mistake of leaving too soon. A few extra days in the Sanatorium is much less expensive than a relapse. Therefore, when the Super-

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intendent comes to you and says: "You may communicate with your family and tell them you will be ready to leave on a certain date"—I want you to look him squarely in the eye and say—"Doctor, won't you let me stay another month?" Dr. Coons, then the superintendent at River Pines, told me at a national meeting in Washington that he did not have the usual trouble with my patients in regard to wanting to leave too early, and asked me why. I told him the instructions I gave.

I would like to have Dr. Fenger tell us whether there is as much trouble these days in that regard as there was then. Also, where does the post-sanatorium follow-up by organized health forces belong: in the hands of a sanatorium, out-patient department, or in the hands of a health department concerned with other and multiple health problems?

DR. THOMAS LOWRY, Minneapolis: I would like to make two comments. One is that in my experience as a practitioner of internal medicine who has referred a number of patients to Glen Lake Sanatorium, the teamwork and development of peace of mind of the patients at that institution is exceedingly effective. Most patients approach the sanatorium with hesitation, not to say fear, and a large majority of them get over these emotions in the manner which Dr. Fenger has so ably described. My second point is derived from the fact that, like Dr. Fenger and Dr. White, I still belong to the school of thought which wishes to remain ultra-conservative in the treatment of tuberculosis. Such an approach has been very well summed up by Dr. White in his remarks about instructing patients to request permission to stay in the sanatorium an extra month.

The only complaint which I have ever had about the management of any patient of mine at Glen Lake Sanatorium or at any other sanatorium, is that I have thought some of these people were discharged too soon. I wonder whether in our present concept of the treatment of tuberculosis, including the use of drugs, surgery, and all the other present day accessory measures, some of us and possibly some of the members of the sanatorium team are yielding to the temptation of trying to get patients out of the institution before they are entirely ready for discharge.

DR. F. F. CALLAHAN, Saint Paul: I think Dr. Fenger has pointed out very successfully that the modern sanatorium is not only a treatment center but an educational institution. It is there they begin to restore the patient as a useful member of society. There is no use in taking a truck driver and sending him back to that occupation after he has lost a lung. Patients of this type must be trained in a lighter occupation if they are to remain well.

DR. EJVIND FENGER, in closing: We have always had trouble with the number of irregular discharges that occur at Glen Lake. That difficulty, however, is shifting. We have a different type of population. When I first came to Glen Lake, I had one floor of forty-two patients consisting of high school and university age groups. Today, with the same service, I have only three patients who fit into that age group. Now we have many, many patients sixty and seventy years of age and over. We likewise have many more federal transients and a higher percentage of our patients come from the lower economic strata of our city and county. In the survey, in eight months' time, 58,000 x-rays revealed thirty-two cases having active tuberculosis. Twenty-two of these cases were found in the city jail or the city workhouse. We have a bigger problem with alcoholics today. A higher percentage of our people, because of their older ages, are on pensions. Perhaps that has something to do with their ability to buy liquor.

As to Dr. Lowry's comments about not discharging the patient too soon, I see eye to eye with Dr. Lowry on these problems. I think I can consider myself a disciplinarian. Some of our staff feel that because of chemotherapy, the patient's stay can be shortened. I do want to emphasize that I am still a strong believer in conservative bed rest treatment. I am sure if Dr. Evans were here he would agree that I am very conservative in my over-all treatment.

DR. J. ARTHUR MYERS, Minneapolis (by invitation) gave the following address.

## PRESENT STATUS OF IMMUNITY IN TUBERCULOSIS

J. ARTHUR MYERS, M.D.  
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No sooner was the discovery of the tubercle bacillus announced than scientists, including Koch himself, began working on methods to immunize artificially against this disease. Jenner had produced an efficacious vaccine for smallpox and Pasteur satisfactorily prevented fowl cholera with a vaccine. Several French scientists in the 1880's reduced virulence of living tubercle bacilli by various methods and used them as vaccine. After introducing these organisms into animals they waited a time for immunity to develop, then injected virulent tubercle bacilli into vaccinated animals and controls. In due time the controls began to fall ill and when all were dead, the vaccinated animals, for the most part, appeared well. Enthusiasm ran high, for on the surface it appeared that the vaccine was effective. However, it was not long until the vaccinated animals began to fall ill and all died from tuberculosis. This dampened enthusiasm and

repeated experiments using vaccine consisting of living tubercle bacilli, and in some instances, that composed of dead tubercle bacilli, resulted in the same failure. These scientists concluded that tuberculosis differs from such diseases as smallpox, typhoid fever and diphtheria in that an attack does not result in immunity.

Marfan established a law which stated that people who had healed scars from tuberculosis of the skin and those who had recovered from tuberculous lymphadenitis would never have pulmonary tuberculosis. This seemed like good evidence that immunity must be present in humans and therefore further interest was stimulated in attempts to produce it artificially. A large number of workers in various parts of the world entered the field. Simultaneously Koch and Trudeau worked with a substance later designated tuberculin. Trudeau published negative results and Koch positive. Koch was soon found to be in error, for no one since his time has been able to make an animal or a person more resistant than normal

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to tubercle bacilli by tuberculin. In 1891, Koch's phenomenon was thought to be a manifestation of immunity. Time proved that it was only a demonstration of allergy.

Workers in this country and elsewhere resumed the use of living tubercle bacilli with diminished virulence in the late 1890's and early 1900's. One of the most colorful demonstrations was that of von Behring, who maintained a culture of tubercle bacilli of human type over a period of six and one half years. When he thought its virulence was so reduced that it could safely be used as vaccine, he practically promised the world freedom from tuberculosis in a brief period. The German government constructed a large plant where this vaccine was made and from which it could be distributed to the world. Von Behring's conclusions could not be confirmed and the organisms in his vaccine not only produced disease among employees in his laboratory but also were transmissible from "vaccinated" animals to people.

Webb and co-workers administered living, virulent, human type of tubercle bacilli to animals and children. They believed that immunity could be established by giving a child one tubercle bacillus and gradually increasing the number. The results were such that this work was concluded following severe condemnation by Calmette of France.

In 1906, Calmette and Guérin obtained a highly virulent bovine type of tubercle bacillus which Nocard had isolated from a tuberculous cow in 1902. This grew luxuriantly on ox bile-potato medium and at the same time its virulence was reduced. These authors became enthusiastic about having reduced the virulence of this organism to such a low level that it would not produce tubercles in animal tissues. Moreover their experiments on cattle made them believe it was efficacious in producing resistance to tubercle bacilli.

Calmette and Guérin were so convinced that they had found a solution for a large part of the tuberculosis problem that they strongly recommended that this organism be administered to infants as a protection against clinical tuberculosis. Their integrity cannot be questioned for they were willing to risk their great names in 1921, when they designated this organism *Bacillus Calmette Guérin*. It has since been known as BCG. Three years later they declared it a virus fixé.

On entering the tuberculosis field professionally in 1920, two tasks carrying immense responsibility were assigned to me. One was to aid in the control of tuberculosis among students on the campus of the University of Minnesota and the other among the children of the city of Minneapolis. At that time there were many clinical cases in both groups. Among the various methods considered for solving the problem was immunization. The entire literature from 1882 was studied.

Pressure was brought from several sources to employ the bacillus which Calmette was recommending so highly. This and dozens of other so-called vaccines which had been in the limelight the previous thirty-eight years were held in abeyance because none of the others had proved satisfactory and Calmette's had not even been tried on humans. In the meantime we employed fundamental measures which consisted of dealing with tuberculosis as a contagious disease.

In 1926, the opportunity came for a personal interview with Dr. Calmette. By this time the first experiments on infants had been reported. His enthusiasm was running high which his data did not seem to support.

For example, Weill-Halle and Turpin had given BCG to 120 infants from July, 1921, to June, 1922. At the beginning of 1926, only eighty of these children could be located. A second group of 356 infants received BCG between June, 1924, and May, 1926, but only 145 had remained under supervision of the experimentors. Moreover these studies were not well controlled and infants died who had received BCG. This did not seem good enough and also appeared to carry some hazard for our students. Therefore, it was still held in abeyance despite the increased pressure that was brought upon us for its use.

After Petroff, Branch and Steenken, Saranac Lake, dissociated BCG into two "R" and "S" colonies with the "S" colony invariably producing progressive tuberculosis in guinea pigs and occasionally in rabbits, and a number of other workers produced disease in animals with it, BCG fell into disrepute in most of the world. However, cultures were kept growing in a few places and administered to small groups of individuals by such persons as Heimbeck of Oslo, Kareszturi and Park of New York, Holm of Copenhagen and later, Rosenthal of Chicago and Aronson of Philadelphia.

BCG received another severe blow when the United States Bureau of Animal Industry conducted intensive and thoroughly controlled studies on cattle. About the same time W. P. Larson, Chief of the Department of Bacteriology, University of Minnesota, and W. A. Evans, Chicago, conducted a large experiment with BCG on cattle. They, and the United States Bureau of Animal Industry, not only found BCG of no avail, but also lamented that it destroyed the value of the tuberculin test which was regarded as the most valuable weapon in eradicating tuberculosis.

A little later, Watson of Ottawa reported that from an extensive study he observed that when animals which had received BCG and controls were subjected to the same exposure, as much tuberculosis developed in one group as the other. Thus his results were the same as those in the United States.

A considerable number of published reports, in which sweeping statements are made concerning efficacy of BCG, have been written by bacteriologists who are participating in production of BCG and dispensing it. Cursory reading of articles could lead one to believe that the studies had been well controlled, diagnoses bacteriologically confirmed and post-mortem findings well documented. On close analysis, however, one finds satisfactory compliance with none of these factors. To date, there has been no well controlled study among humans and it seems doubtful if such a study could be conducted anyplace in the world with people living in their homes. The Oxford University investigators of vole tubercle bacillus vaccine said, "To plan a controlled experiment in tuberculosis vaccination in man is a matter of so much difficulty as to be virtually impossible." Medlar said, "The difficulties of assessing the value of vaccination of BCG in experimental animals



under controlled conditions, emphasizes the greater difficulty encountered in the experiments in man because of the existence of uncontrolled and uncontrollable conditions."

In the BCG experiments in people, for the most part, diagnoses have been made from x-ray shadows alone. Inasmuch as shadows are never pathognomonic for any disease, it is not likely that any considerable degree of accuracy in diagnosis obtained in such studies. Moreover, there has been a tendency to consider a shadow-casting lesion in the person who has received BCG, as representing a non-tuberculous condition, whereas a similar lesion in a person who has not been vaccinated is regarded as a tuberculous one. For example, Dalstrom and Difs who reviewed the records of men conscripted for military service in Sweden between 1941 and 1944 compared 36,235 who, on conscription were non-reactors to tuberculin and were given BCG on a voluntary basis and 25,230 who did not react to tuberculin and who rejected BCG. They said, "Generally speaking the diagnosis was somewhat easier to establish in the (originally) tuberculin negative than in the vaccinated group, being helped by the conversion from the non-reactive to the reactive state." Apparently this means that a lesion in a person becoming a tuberculin reactor without BCG was presumed tuberculous unless it was proved otherwise, but in a person who had received BCG it was presumed to be non-tuberculous unless it was proved to the contrary. In most cases proof was lacking. Obviously, accurate diagnoses are not possible without bacteriological determinations.

Among those in BCG experiments who have died in both the vaccinated and the non-vaccinated groups, there has been such a sparsity of dependable necropsies as to significantly invalidate reports. Inasmuch as other diseases closely simulate tuberculosis in gross and microscopic appearance, differentiation is possible only by finding the etiological agent. Relatively few bacteriological determinations have been reported at post-mortem in BCG experiments.

Opponents of BCG are often asked if they know of a single person who has fallen ill or who has died from BCG, whereupon the proponents are asked whether they know that BCG has not been responsible for many persons who have fallen ill and a considerable number who have died subsequent to its administration.

\* Disasters have occurred recently which were promptly attributed to growing BCG on other than glycerol-bile-potato medium. It is stated that if this medium is used exclusively the bacillus remains at a fixed virulence. Even if this were an established fact, "... we must bear in mind that the human body is not to be compared to glycerol-bile-potato as a medium for its continued viability and development. No one can predict what may happen in the course of time if BCG is implanted in the human body and if accidentally carried from human being to human being, or what transformations may occur after such a train of events." (Petroff et al 1929)

Erroneous conclusions have been drawn by comparing unlike groups and conditions. For example, in the first experiment on infants by Weill-Halle and Turpin, those who received BCG were carefully guarded against con-

tacts with contagious cases of tuberculosis whereas the controls were left in their homes with adults who had contagious disease. BCG was given credit for the fact that less tuberculosis developed among the vaccinated infants even though Hess of Chicago, Bernard, Debres and Grancher of France had previously conducted almost identical experiments, except that BCG was not administered to the group protected from exposure and reported as good results as Weill-Halle and Turpin did when BCG was added.

Concerning the BCG experiment on Indians of North America, Aronson says, "Principally the information for the analysis consists of annual observations on the tuberculin reaction and annual x-ray films of the chest with only limited clinical and laboratory data." There has been such an inadequate supply of nurses and physicians in the Indian Bureau that it would be physically impossible for the few professional workers to carry out well controlled experiments, since it is admittedly impossible to carry out such experiments in well organized societies of people. The difficulty is multiplied manifold when working with Indians, even if personnel were available. Moreover, better results have been reported in tuberculosis control among Indians without BCG than in areas where it has been employed.

Such unlike conditions as allergic manifestations, including erythema nodosum, small primary parenchymal infiltrates, enlarged hilum structures, et cetera, which have occurred in those who have not received BCG, have been considered cases of clinical tuberculosis and compared with the number of cases of actual clinical disease that developed among persons previously sensitized to tuberculin. The two conditions are not comparable in any respect.

One is often asked why the World Health Organization decided to adopt a world-wide BCG campaign and why it went about soliciting governments to participate. This was largely the result of observations which had been made in Denmark. There in 1927, it was decided to administer BCG, especially to children living in areas of considerable exposure and to students of nursing and medicine. Over the next few years it was observed that the mortality rate was decreasing. This resulted in so much enthusiasm that it was decided (1940-1942) that practically all school children between the ages of ten and fourteen years would ultimately receive BCG. Following this there was a continued decrease in mortality but not as great as previously. About 1947 and thereafter, a sharper decrease in mortality occurred and at first it was presumed that this was due to BCG. Therefore, the Danish Red Cross, having been convinced that BCG is extremely efficacious, along with other organizations entered into an extensive BCG campaign which became world-wide in scope.

On analysis, the evidence of effectiveness of BCG in Denmark is nil. Its proponents had apparently neglected to observe that the mortality rate in Denmark had been decreasing sharply for a long time prior to the first administrations of BCG in 1927, and that the rate of decrease was not changed following 1927 nor was it changed in a favorable manner following the extensive administration in the early 1940's. Nor was it known

when the world-wide campaign was started that the sharp decrease beginning about 1947 and continuing thereafter in Denmark was due largely to chemotherapy, particularly streptomycin. Moreover, this sharp decrease beginning about 1947, occurred practically everywhere in the world where new chemotherapy was employed, regardless of whether BCG was also in use.

Another oversight on the part of those who sparked the world-wide BCG campaign was that in areas comparable to Denmark where BCG was not in use a decline in mortality rate was as great and in some places greater than in Denmark. For example, the states of Wisconsin and Minnesota each with a population approximately the same as that of Denmark, but where BCG has never been used, except in minor experiments, has long decreased at approximately the same rate as that of Denmark, both before and since the Denmark BCG era. There is not the slightest evidence that BCG affected in any way the mortality curve in Denmark or that its absence changed the curves in an unfavorable way in Wisconsin and Minnesota. Therefore, the world-wide BCG campaign was started, and has continued with no evidence whatsoever that it was of value in Denmark or anywhere in the world.

The credit given to BCG belonged to other factors and it was these which the World Health Organization would have done well to offer the world more abundantly, rather than BCG. Factors common to Denmark, other Scandinavian countries, Wisconsin, Minnesota, the greater part of the United States and other parts of the world where good tuberculosis control work has been demonstrated have been, and still are, sanatoriums, good diagnostic and therapeutic work and control of the disease in animals. Everywhere where these three factors have been operating to a reasonable degree, there has been marked decrease in tuberculosis among humans.

As we pursued our tuberculosis control program among children and University students, allergy to tuberculo-protein became an ill omen. It was observed that only those who were allergic developed clinical tuberculosis. Experimental work had revealed that allergy is pre-requisite for the development of serious and progressive tuberculosis. In 1952 Krause said, "Accordingly, the allergic reaction is seen to be responsible for all of the acute manifestations of tuberculosis and, when so considered, it must be viewed as a potent contributor to pathogenesis. Human beings pass as perfectly well as long as they hold their tuberculous infections asymptomatic, inactive. But they are allergic and any discharge of sufficient focal material to a new place will render them immediately ill because of the allergic reaction that ensues promptly." Therefore, one of our chief endeavors was to prevent allergy to tuberculo-protein by avoiding exposure to tubercle bacilli.

To allergize human tissues willfully by introducing living tubercle bacilli, BCG or others into the individual's body was entirely contrary to our method of attack. We are trying to avoid allergy rather than produce it. When it did appear through natural infection we were using allergy to locate the source of the exposure. In fact it had long been our best epidemiological agent. Proponents of BCG, vole tubercle bacillus and the like,

maintain that the creation of allergy by the introduction of these living organisms indicates successful vaccination despite the fact that evidence is entirely lacking that allergy is anything more than a dangerous factor in the evolution of tuberculosis in the human body. If we had allergized all of our children and students on first seeing them we would have lost our best epidemiological agent, all possibility of early diagnosis in the strict sense of the word and in all likelihood the tuberculosis situation among them would have remained unchanged or even become worse.

Our observations on children and students, together with those of others, convinced us that the conclusions drawn by the French scientists of the 1880's from their attempts to vaccinate against tuberculosis were correct, namely, that no dependable immunity develops in the human body as the result of presence of tubercle bacilli of any degree of virulence. Tuberculosis is notoriously a relapsing disease and we could find no evidence of immunity being produced as the result of a mild or severe attack.

Scientists and physicians were long deceived by interpreting the presence of calcification in the chest as a manifestation of immunity. It was later learned that deposition of calcium is not a specific process for any disease and that in some areas of the world more calcium deposits are due to other causes than tuberculosis.

Presence of fibrosis in and about the tuberculous lesion also deceived. It is now known that this only indicates response to an irritant and not evidence of immunity. Other irritants than tubercle bacilli result in more fibrosis, notably silicon dioxide.

Although in the 1920's there was no evidence of efficacy of BCG or any other of the dozens of agents that had been employed, nor have we since seen such evidence, the danger element alone never would have permitted us to introduce live tubercle bacilli of any degree of virulence or total absence of virulence into the bodies of humans. Recent developments have justified this fear. Although no one doubts that Calmette and Guérin had reduced the virulence of BCG to such low levels that it would not produce tubercles in animal tissues and they declared it a virus fixé they had no assurance that it would actually remain of fixed virulence.

As time passed it was observed that when BCG was introduced subcutaneously sometimes tuberculous ulcers and abscesses formed at the sites of administration and the regional lymph nodes became markedly involved as manifested by enlargement, breaking down and discharge of pus for many months. This occurrence was frequent and annoying and should have been frightening. Rosenthal of Chicago, and others sought to solve this problem by using the puncture method of administration similar to that now used in smallpox vaccination or by applying it to a superficial scarification of the skin. This decreased somewhat the incidence of clinical lesions developing at the site of administration and in the regional lymph nodes but some still occurred.

On several occasions we have called attention to numerous reports of clinical tuberculosis which develop in the skin and subcutaneous tissues as well as regional lymph nodes. Only a few of the more recent ones are now

presented. Olga Rojas of Equador (1953), observed results of BCG vaccination in 14,500 infants and children up to the age of fifteen years. Lymphadenitis occurred in twenty-two. The lesions varied from small simple infarction to those that were acute and progressed to caseation. This complication occurred in two or three months after administration of BCG. In the majority of cases there was spontaneous regression. In others antibiotics had to be administered and in still others surgical treatment was necessary. J. I. de Bruyne et al (1952), reported on 809 infants who received BCG. Of the 592 who were later examined 165 had moderate swelling of the lymph nodes of which seventy-eight broke down. They later reduced the size of the dose of BCG and found such complications less frequent. In five infants and in one twenty-one-year-old medical student skin lesions developed in the area of intracutaneous vaccination which resembled lupus vulgaris lesions. Exanthems resembling tuberculids were also seen in some infants. They state that since lymphadenitis, tuberculids and even mastoiditis have also been observed after administration of BCG they feel that the frequency of complications is the result of the size of the dose rather than the mode of application.

It is curious that apparently no one sensed that something had happened to the cultures of BCG that had been maintained in different parts of the world because the original *Bacillus Calmette Guérin* would not produce tubercles in living tissues. In fact, Calmette had scorned the idea of introducing as a vaccine any live tubercle bacillus that would produce tubercles. Therefore the so-called BCG that was resulting in the clinical lesions in the arms and axillary lymph nodes in so-called vaccinated individuals did not meet Calmette's requirements.

Particularly after these clinical lesions were being produced by the so-called BCG cultures in use, it is difficult to understand why no one investigated these cultures in an attempt to determine what had occurred that was responsible for the development of these clinical lesions. This is especially remarkable in view of the fact that Petroff, Branch and Steenken as well as others had produced tuberculosis with BCG in animals in 1929 and earlier. Apparently the few bacteriologists in the world who were maintaining cultures believed that Calmette could not have been wrong when he declared BCG a virus *fixé*.

The necessity for investigating cultures of BCG now extant was again emphasized when Dubos of Rockefeller Institute for Medical Research, produced progressive and sometimes fatal pulmonary tuberculosis in mice on deficient diets and Vorwald et al produced progressive and killing disease with BCG in silicotic guinea pigs. Hauduroy and Rosset of France, and also Puntigam of Vienna, have produced fatal tuberculosis with BCG in normal golden hamsters, and Hauduroy has found that it results in disease in ground squirrels.

It is also disturbing to know that the statement so frequently made to the effect that BCG has only a fleeting existence after introduction may now be seriously questioned. Vorwald et al found so-called BCG alive and virulent in silicotic guinea pigs eighteen months after administration. At this moment there is no proof that this organism may not survive in human tissues indefi-

nately just as bacilli acquired through natural infection do.

The teaching that BCG remains at the site of the initial administration and in the regional lymph nodes has not been supported by recent animal experiments. After intracutaneous administration Strom found them three minutes later in the nearest lymph node 18 centimeters distant and half had arrived at this point in 10 minutes. Gernex-Rieux found organisms in the spleen on the eleventh day after they had been administered by the skin scarification method. It is difficult to understand why it should have been expected that these tubercle bacilli would remain in the area of administration since it is well known that this does not happen with other tubercle bacilli or even inanimate material such as lamp-black.

Although Calmette declared BCG a virus *fixé* in 1924, it was not until recently that serious effort was made to determine what changes had taken place in so-called BCG cultures which have been maintained in different parts of the world. Dubos and co-workers assembled cultures from various laboratories and found no two alike even in their gross cultural appearances. Apparently different changes had occurred in the various cultures. On further investigation Dubos found that no culture contains a single bacterial form, such as Calmette and Guérin designated BCG, but each one contains multiple bacterial forms. Presumably these originated through mutation. Moreover, these bacterial forms varied markedly in their ability to multiply *in vivo*. It is possible these forms with such invasiveness in animal tissues which have been producing progressive and killing disease in animals and causing clinical lesions at sites of inoculation and regional lymph nodes in people, may result in much destruction over the next few decades in the bodies of persons who have been willfully infected with so-called BCG.

Animal experiments continue to be performed, but no evidence has accrued to change the conclusions of the French scientists of the 1880's. For example, Helmert, 1952, found that guinea pigs which had received BCG and six weeks later were inoculated with virulent tubercle bacilli, lived a few days longer than controls, but all died from tuberculosis. Other animals received dead tubercle bacilli instead of BCG and the prolongation of life after they were given virulent organisms was essentially the same as those given BCG.

Although sweeping claims regarding efficacy of BCG in humans continue to appear in the literature, none has been supported by adequately controlled experiments. Bogen, 1953, said, "Despite the great enthusiasm expressed by proponents of BCG vaccination, both with the 'concurrent' oral regimen of De Assis and with the intradermal or percutaneous method sponsored by the UNICEF, these measures which have been applied to more than a million infants and other young negative tuberculin reactors in South America, have not yet been given to enough of the older adults, who contribute the greater part of the tuberculosis mortality, to be credited with playing any part in the striking reduction in the tuberculosis deaths among adults."

Palmer reported on the four experiments with BCG by the Division of Chronic Disease and Tuberculosis of

the United States Public Health Service. During the first few years of the experiment a very large portion of the clinical tuberculosis which appeared was in the group who reacted to tuberculin when the experiment began and therefore were not vaccinated. Second, so little tuberculosis occurred among those eligible for vaccination, whether or not they were vaccinated, that the number of cases and deaths is still too small to provide any definite evidence. "It is possible that in the Indian and Puerto Rican mortality data there may be early signs that BCG in certain circumstances could be useful in tuberculosis control. On the other hand it is also true that in none of the morbidity comparisons is there any evidence of the beneficial effect of BCG." Third, these studies to date do not indicate that tuberculosis in the United States would be more effectively controlled by adding mass vaccination programs.

D. Hoogendoorn, 1953, wrote on what can be expected from vaccination with BCG in the Netherlands. He pointed out that in 1951 a total of 130 children less than fourteen years of age of whom seventy-nine were less than five years died from tuberculosis. He stated that if vaccination with BCG should be 100 per cent effective only a comparatively small number of children's lives should be saved and to accomplish this 220,000 would have to be vaccinated annually. Furthermore, he said that it is estimated that about one of 3,000 vaccinated would die from tuberculosis. Thus seventy-four of the vaccinated would die each year.

Obviously, no one now knows the actual composition of any of the cultures of tubercle bacilli being dispensed as BCG. We do know that marked changes have occurred in the various cultures since Calmette produced them. We have no assurance that even more invasive forms will not appear in the future nor do we know that this will not occur among those which have already been introduced into human bodies.

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The meeting was adjourned.

ROBERT E. PRIEST, M.D., *Secretary*

#### AMERICAN FOUNDATION FOR ALLERGIC DISEASES

Formation of a Scientific and Educational Council of nationally known scientists and educators to promote more research and wider professional education in the field of the allergic diseases has been announced by the American Foundation for Allergic Diseases from national headquarters, 525 Lexington Avenue, New York City.

The members are as follows: Robert A. Cooke, M.D., director The Institute of Allergy, Roosevelt Hospital, New York; Frank J. Dixon, M.D., professor of Pathology, University of Pittsburgh Medical School, Pittsburgh, Pa.; Alfred Gilman, Ph.D., professor of Pharmacology, College of Physicians and Surgeons, Columbia University, New York; Elvin A. Kabat, Ph.D., professor of Microbiology, College of Physicians and Surgeons, Columbia University, New York; Richard A. Kern, M.D., professor of Medicine, Temple University Medical School, Philadelphia, Pa.; Giles A. Koelsche, M.D., assistant professor of Medicine, Mayo Foundation Graduate School, University of Minnesota, Rochester,

Minn.; John H. Mitchell, M.D., professor of Clinical Medicine, Ohio State University, Columbus, Ohio; Henry Stevens, Ph.D., head of Section of Allergens, Agricultural Research Service, U.S. Department of Agriculture, Washington, D. C.; Cyrus C. Sturgis, M.D., director Simpson Memorial Institute for Medical Research, professor of Medicine, University of Michigan, Ann Arbor, Mich.; Marion B. Sulzberger, M.D., chairman Department of Dermatology and Syphilology, Post-Graduate Medical School, New York University-Bellevue Medical Center, New York.

The American Foundation for Allergic Diseases was established a year ago under the sponsorship of the American Academy of Allergy and the American College of Allergists as a non-profit organization of physicians and laymen to promote allergy research, improve professional education, increase treatment facilities for allergy sufferers, and spread public understanding of the allergic diseases so as to bring about early diagnosis and treatment.



# Minneapolis Surgical Society

Meeting of February 3, 1954

The President, Robert Tenner, M.D., in the Chair

## POLYPS OF THE COLON AND RECTUM

RUPERT B. TURNBULL, JR., M.D.

Cleveland, Ohio

POLYPS of the large intestine and rectum have been the subject of intense and varied studies during the past ten years. With sigmoidoscopy performed more frequently as a routine procedure, more polypoid lesions are discovered. This is of increasing significance in cancer control since the adenomatous polyp of the colon and rectum is the seat of cancer, or closely associated with it. One-third of our rectal cancers have had so-called "satellite polyps" and it is not unusual to see a polyp protruding from the colostomy following abdominoperineal resection of the rectum. In addition, rectal polyps are frequently found in patients with a cancer in some other parts of the colon. We would agree with other workers that a polyp in the rectum is a danger signal, and possibly a "sentinel lesion" for a cancer above.

The interpretation of polyp biopsy specimens is not uniform among pathologists, and rather critical problems arise as to the best method of treatment, when a diagnosis of cancer arising in polyp is made or inferred. When submitted to the pathologist, the innocent-appearing polyp may be reported as any one of the following: "adenocarcinoma Grade I in adenomatous polyp", "adenoma malignum", "severe dysplasia, no evidence of invasion", "adenomatous polyp with atypism", "adenocarcinoma", "adenocarcinoma *in situ* in papillomatous polyp", or "microscopic focus of adenocarcinoma arising in polyp". Is radical surgery indicated when this polyp has been removed from the rectum? Is simple fulguration adequate? Should a segment of colon be removed at a second operation (following transcolonic polypectomy) on the basis of one of these reports? There is no question that radical removal of the rectum is being carried out for rectal lesions of doubtful malignancy, as well as for frank cancer.

Our main concern is the treatment of polyps of the rectum in which cancer is said to be present. It has been our belief that such polyps can be successfully treated by local removal, rather than by radical surgery, providing the carcinoma is not invasive in respect to the muscularis mucosa, and providing the biopsy specimen is representative of the lesion.

Any soft or pedunculated polyp must be viewed as potentially benign rather than malignant. Ulcerating, hard tumors are practically always malignant and several biopsies from the firm, rolled-over border are sufficient. Soft lesions, however, must be critically analyzed before definitive treatment is begun. The whole lesion should be pulled away from the mucosa with grasping forceps,

and all of the tissue sectioned carefully. In this manner, the patient would receive full benefit of teamwork between the surgeon and the pathologist. Unfortunately, such consideration is not always given. The reasons for this are that all too often only a small part of the lesion is removed for section and may not be representative. Moreover, there is a great variation between pathologists and their interpretations of cancer in polyps. Dysplastic epithelium may be labeled as adenocarcinoma, and the surgeon may use this nomenclature as a basis for advising and performing radical surgery. It is probably more important to save a normal rectum, than it is to remove one for a well-established cancer. In any event, we still see a number of such patients in consultation with their own physicians, who are not satisfied with the pathologic diagnosis or advice of the surgeon. In most of the cases, repeat proctoscopy reveals no evidence of a lesion (previously coagulated or excised), and the sections are those of a polyp with dysplastic epithelium. Others bring slides with obvious adenocarcinoma or adenocarcinoma in polyp. In those with no residual lesion, no operation is indicated regardless of the biopsy finding of cancer or cancer in polyp. We cannot bring ourselves to remove a rectum where no lesion is visible. Where polyp still remained, following biopsy elsewhere, it was totally removed for study before making a final decision regarding treatment.

### Pathologic Considerations

The decision to carry out radical or conservative surgery depends on an understanding of the histologic characteristics of polyps of the colon and rectum. These epithelial tumors are true neoplasms arising from the glandular epithelium. They may be on pedicles, or they may be on a wide base or growing diffusely over the surface of the rectum. Some form of adenocarcinoma is found in about ten per cent of the patients. The epithelium of the polyp is separated from the submucosa of the colon by the muscularis mucosa, and since the submucosa contains the bulk of blood vessels and lymphatics, it would appear that the muscularis mucosa is a true dividing line between superficial and invasive carcinoma arising in polyp. In 1952, Dr. Edwin Fisher<sup>1</sup> of the Department of Pathology made a detailed histologic study of 350 rectal polyps that were removed and treated by coagulation and implantation of radon seeds. Of the thirty-five (10 per cent) classified as containing adenocarcinoma arising in polyp, eleven were found to be

invasive in respect to the muscularis mucosa, while twenty were found to be superficial. Since our two previous reports<sup>1,4</sup> thirty-one of these thirty-five were followed and examined, leaving four unaccounted for. This group of patients was followed for a period of two to ten years. In each instance, the operator thought that the lesion was benign and that local treatment would be sufficient. This demonstrates the fallacy of attempting to determine the state of malignancy of a given tumor by observation or palpation. It is significant that none of these patients have died of recurrence or metastasis from the original tumor. Two have died from undetected cancers in the colon above the lesion, while two others have had resections of the colon for other primary lesions located above the rectum. The suggestion that the rectal polyp may be a "sentinel polyp" for lesions above is well demonstrated in this series. In all soft, non-ulcerated polyps of the rectum, we are continuing to consider them benign until proven otherwise. The lesion is either completely excised or if not readily accessible, it is "plucked" with biopsy forceps and submitted for multiple section.

We are in complete agreement with Judd's<sup>2</sup> statement that "a colon in which polyps are prone to form serves warning that it is also a colon in which carcinoma is prone to form". This statement is even more significant if one will consider the visible rectum and lower sigmoid colon to be the commonest site of polyps, and conduct a proper investigation to find the lesion that may be present above.

A plea is made for careful consideration of the histologic picture of the benign-appearing rectal lesion be-

fore decision is made for treatment. Whether or not invasive cancer is present is determined only by adequate biopsy rather than solely by the operator's opinion. One must be quite familiar with the pathologists' nomenclature in relation to whether or not it actually represents true cancer arising in polyp. An individualized plan of therapy can, therefore, be established by excision biopsy and surgeon-pathologist teamwork. Our own experience would indicate that rectal polyp with noninvasive adenocarcinoma can be treated conservatively, while invasive carcinoma may be considered to be suitable for radical surgery.

Although our series is relatively small, it is of value when included with those of others.<sup>3</sup>

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2020 E. 93rd Street

The meeting adjourned.

N. C. PLIMPTON, M. D., Secretary.

### HIGH BLOOD PRESSURE

High blood pressure appears to be much less dangerous among women than among men, according to a pilot study of her company's employees made by Miss Annie Mary Lyle, fellow of the Society of Actuaries and underwriting research analyst of the Prudential Insurance Company. Results of the study were presented to the Western Spring Meeting of the Society at the Edgewater Beach Hotel in June.

The mortality experience among 1,227 employees with high blood pressures ranging from slight to very marked was carried through a period ranging from six months to twenty years with periodic examinations. Statistics were kept for the group as a whole and for men and women separately.

The women, comprising 40 per cent of the total number examined, showed a death rate much lower than that for men and also much lower than that which had been anticipated for the women on the basis of normal underwriting procedure.

"The group available for this study is much too small

for the mortality ratios to be relied on for rating purposes and the female mortality is incredibly low for reasons that are not apparent," Miss Lyle said. "The difference between the sexes is so great, however, as to indicate that in future investigations, males and females should be studied separately. If a substantial difference is confirmed by an experience sufficiently large to be dependable, more lenient treatment of females with high blood pressure would be in order."

The study also indicated that electrocardiograms are of considerable value in judging high blood pressure cases, but that the x-ray does not appear to contribute anything.

"One is forced to the conclusion that women withstand the stresses of high blood pressure better than men do," Miss Lyle said, commenting on the trend over the twenty years. Although the women in the group studied had more hypertension of moderate and marked degrees than did the men, on entering the experience, they showed a much lower death rate than did the men.

## ◆ Reports and Announcements ◆

### MEDICAL MEETINGS

#### National

American Heart Association, Washington, D. C., September 12-17, 1954.

Annual Assembly in Otolaryngology, University of Illinois, Chicago, Illinois, September 6-11, 1954.

Annual Convention of the National Society for Crippled Children and Adults, Hotel Statler, Boston, Massachusetts, November 3-5, 1954.

Neurosurgical Society of America, Grand Hotel, Mackinac Island, Michigan, July 21-24.

#### International

Conference of International Union Against Tuberculosis, Madrid, Spain, September 26-October 2, 1954.

Congress of International Association for the Prevention of Blindness, New York, New York, September 12-17, 1954.

International Anesthesia Research Society, Los Angeles, California, October 10-14, 1954.

International Congress of Clinical Pathology, Washington, D. C., September 6-10, 1954.

International Congress of Diseases of the Chest, Barcelona, Spain, October 4-8, 1954.

International Congress of Gynecology and Obstetrics, Geneva, Switzerland, July 26-31, 1954.

International Congress of Group Psychotherapy, Toronto, Ontario, Canada, August 12-14, 1954.

International Congress of Mental Health, University of Toronto, Toronto, Ontario, Canada, August 14-21, 1954.

International Poliomyelitis Congress, University of Rome, Orthopedic Clinic, Rome, Italy, September 6-10, 1954.

International Congress of Hematology, Paris, September 6-11, 1954.

International Society of Blood Transfusion, Paris, France, September 12-19, 1954.

International Congress of Industrial Medicine, Naples, Italy, September 13-19, 1954.

International Congress of Internal Medicine, September 15-18, 1954.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, September 9-11, 1954.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, August 30-September 3, 1954.

International Society of Geographical Pathology, Washington, D. C., September 6-10, 1954.

Pan American Congress of Gastroenterology, Sao Paulo, Brazil, July 19-24, 1954.

World Congress of Cardiology, Washington, D. C., September 12-18, 1954.

July, 1954

World Federation of Occupational Therapists, Edinburgh, Scotland, August 17, 1954.

World Medical Association, Rome, Italy, September 26-October 2, 1954.

### MINNESOTA ACADEMY OF OCCUPATIONAL MEDICINE AND SURGERY

The Minnesota Academy of Occupational Medicine and Surgery, which now has fifty-six members, held its first annual meeting on May 26, 1954, at the Minneapolis Athletic Club.

At a business session after the 7:00 o'clock dinner, Dr. John Shrouts, Medical Director, General Mills, Inc., Minneapolis, was named president of the organization to succeed retiring president, Dr. Wilford E. Park, Industrial Physician, Minneapolis Health Department. The other 1954-55 officers will be: Vice President—Leslie W. Foker, M.D., Minneapolis; Secretary—James Fox, M.D., Minneapolis; Treasurer—Tracy Barber, M.D., Austin; Recorder—Gordon MacRae, M.D., Duluth; Executive Committee member for two years is H. E. Drill, M.D., Hopkins. Continuing in the second year of his two-year term as Executive Committee member is Edwin G. Benjamin, M.D., Minneapolis.

A scientific paper, "General Problems of the Heart and Pre-employment Examinations," was presented by Dr. A. C. Kerkhof, cardiologist, Minneapolis.

### CONTINUATION COURSE

The University of Minnesota announces a continuation course in *Psychiatric Principles in General Practice* from September 8 to 10, 1954. The course will be held at Douglas Lodge, located deep in the woods of northern Minnesota on the shores of beautiful Lake Itasca. The program will concern those psychiatric and psychosomatic problems which are most frequently seen in general practice, and practical management will be emphasized throughout. The guest faculty will include Dr. Bernard C. Glueck, Jr., Ossining, New York, and the course will be presented under the direction of Dr. Donald W. Hastings, Professor and Head, Department of Psychiatry and Neurology, and Director, Division of Psychiatry. The remainder of the faculty will be drawn from the University of Minnesota Medical School and the Mayo Foundation.

Sessions will end each day in mid-afternoon to permit time for fishing, boating, and other recreational activities. The fee will be \$130.00 which will include registration, tuition, meals and lodging, instructional material, transportation from Minneapolis to Douglas Lodge and return, and fishing license. Further information may be obtained from the Director of Continuation Medical Education, University of Minnesota Hospitals, Minneapolis 14, Minnesota.

# Letters to the Editor

## TEACHING THE NURSES AID

Dear Dr. Wells:

The Minnesota Legislature of the 1953 session passed an enabling act providing for the establishment of a program of nursing education at the Mankato State Teachers College, Mankato, Minnesota. This legislation was requested and supported by a group of physicians and citizens from southern and southwestern Minnesota among which two of the active leaders were Dr. L. L. Sogge of Windom, and Dr. H. J. Nilson of North Mankato. The actual enabling act passed by the 1953 legislature reads in part—

"An act appropriating money to the Mankato State Teachers College . . . to be used by the college to teach certain subjects in the preliminary training of students who take courses in nurses training so that they may qualify to become registered nurses as defined by Minnesota Statutes . . ."

Because the college officials did not receive official word that the governor had signed the bill until about the first of May, no advertising or publicity went out to high school graduates of surrounding areas concerning the new nurses training program to be offered. Even with the lack of advance notice, however, twenty-six girls enrolled for the course in September, 1953, when the fall term of the Mankato State Teachers College started. There have been a few losses in students during the year due to marriage, inability to maintain satisfactory academic work, or to transfer to the teaching program. For this coming year, when it was possible to notify area high school graduates of the program, more than 220 prospects listed their names with the college. This indicates that there is no apparent shortage of prospects for nurses training in the area served by the college.

Under present plans, students may enter the course once each year, in the Fall. During the first year, classes will be in general education and pre-professional courses, such as English, sociology, psychology, chemistry, biology, anatomy, physiology, microbiology, nutrition, and nursing arts. Should the student desire to change her vocational objective after the first year, she may do so without loss of credit.

The remainder of the four-year program includes approximately one additional year of broad general education and two years of courses in nursing: classroom and clinical instruction, and supervised practice in the various types of nursing. On the completion of this curriculum, the student receives the degree of Bachelor of Science in nursing. The program is so arranged that the student who has completed the first three years of work should be eligible to write the state examination for registration (R.N.).

The local hospitals at Mankato—St. Joseph's with its new \$4,000,000 plant, and the Immanuel with its

new 60-bed addition—are co-operating with the college, and will serve as training centers for much of the program. The auxiliaries from both hospitals were active in the support of the program. Other affiliations with hospitals are arranged to provide specialized clinical experience.

The instruction and the entire curriculum are under the direct administration of the College. The student nurse is a regular college student, eligible to participate in the campus activities. She attends many of the classes with students specializing in other Divisions of the College and she receives the advantages of the full resources of the college's program, faculty, and educational facilities. The curriculum is planned to meet the standards of the profession.

Miss Clara May Miller will direct the program. She has a background of teaching and nursing. Miss Miller comes to Mankato from the Ball Memorial Hospital of Muncie, Indiana, where she has been Superintendent of Nurses and Director of the School of Nursing. The nursing school there is affiliated with Ball State Teachers College, an institution quite similar to Mankato State Teachers College in which the new program has been initiated.

C. L. CRAWFORD

President, Mankato Teachers College

Mankato, Minnesota

April 30, 1954

## MEDICAL MALPRACTICE INSURANCE

Dear Dr. Wells:

I have read with great interest the editorial, "Medical Insurance and Its Costs," in the May, 1954, MINNESOTA MEDICINE. The series of statements of fact are gleaned from malpractice lawsuits. The medical profession, too, is aware of and has accepted these facts. The insurance companies have lectured our profession concerning these abuses that oftentimes precipitate a malpractice suit. Our profession, even as the insurance companies, has likewise brought forth these facts before our organization concerning these ever-worsening ugly clouds, but again it has not been of much avail. At least the insurance premium rates are not coming down.

Possibly, many of us feel that since we carry this insurance in companies out of the State, even as we do on our automobiles, we need not be perturbed when we get into trouble. We simply drop it into their laps and then let them take over from there. Personally, I have been fortunate in that respect. But it does not follow that one may not encounter difficulties. And, since the ever-increasing premium is a growing problem, and since it is running rife, and the insurance companies are compelled to continue raising the rates, one

(Continued on Page 544)



## ◆ Of General Interest ◆

**Dr. Gilbert S. Campbell**, Department of Surgery, University Hospitals, who was recently awarded one of the distinguished Markle Scholarships in the amount of \$30,000.00, has now been awarded the John Horsely Memorial Prize by the University of Virginia in the amount of \$600.00, for his paper entitled "Effect of pH Changes on Vagal Inhibition of the Heart."

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**Dr. Ivan D. Baronofsky**, associate professor of surgery at the University hospitals, was guest consultant at the last of three clinical sessions held for the McLeod County Medical Society in Glencoe.

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**Dr. R. P. Pearsall**, Virginia, was presented with a gold pin and certificate in recognition of his fiftieth year in the practice of medicine, at the State Medical Convention in Duluth.

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**Dr. Charles A. Neumeister**, Minneapolis, attended the annual meeting of the American Proctologic Society in Los Angeles, California, June 2-5. He presented a joint paper with Dr. Walter A. Fansler entitled "The Treatment of Incontinence and Other Abnormalities Following Infection of the Anal and Rectal Regions."

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**Dr. Walter A. Fansler**, Minneapolis, was one of three guest speakers at the Schoitz Memorial Hospital Annual clinic, Waterloo, Iowa, May 27. He presented two papers, one on "The Diagnosis and Treatment of Polyps of the Colon and Rectum," and the other on "Common Errors in the Diagnosis and Treatment of Anorectal Diseases," and participated in a general discussion panel composed of the three guest speakers.

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At the meeting of the Society for Clinical Investigation in Atlantic City the following doctors from the Mayo Clinic attended: **Drs. A. Albert, C. M. Blackburn, H. B. Burchell, J. C. Cain, C. F. Code, W. S. Fowler, Jr., E. A. Hines, D. R. Nichols, H. F. Polley, R. M. Salassa, R. G. Sprague, W. E. Wellman and E. H. Good.**

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The offices of Doctors **Clarence E. Arlander** and **Carl J. Olson** were moved in May from 2300 Central Avenue, to their new building at 901 Twenty-third Avenue, N.W., Minneapolis.

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**Drs. H. A. Andersen, O. T. Clagett, John Kirklin, J. R. McDonald and H. W. Schmidt**, Mayo Clinic, attended the meeting of the American Association for Thoracic Surgery in Montreal, Quebec.

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**Dr. F. R. Kotchever**, President of the East Range

Clinic of Eveleth and Virginia, is one of the many doctors who were in the group of the American College of Surgeons who were the guests of the Association of Surgeons of Great Britain and Ireland and the Royal College of Surgeons of Edinburgh, Scotland, at sectional meetings. Dr. Kotchever was gone for seven weeks. Mrs. Kotchever and their two daughters accompanied him on the trip.

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**Dr. and Mrs. Thomas Lowe**, South Saint Paul, spent three weeks in Italy where Dr. Lowe attended the sessions of the International College of Surgeons.

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**Dr. R. H. Puumala** lectured to the interns of St. Luke's hospital in Cloquet in May. He spoke to them on the office equipment needed for a medical practice in a smaller community.

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**Dr. J. E. Verby**, Litchfield, attended a two-day refresher course at the University of Minnesota Center for Continuation Study.

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**Dr. Walter J. Bo**, of the department of anatomy of the University of Minnesota, has been given a \$3,135 research grant to study the relationship between vitamin A and estrogen in producing uterine cell changes in rats.

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**Dr. Ann Whelan Arnold**, Minneapolis, visited her son and attended her daughter's graduation from Cornell University's college of medicine en route to the American College of Surgeons' convention in London.

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**Dr. Roy G. Holly**, associate professor of the department of Obstetrics and Gynecology at the University of Minnesota, was the guest consultant at the first of two clinical conferences held in Breckenridge on May 6. Dr. Holly presented some case histories on cancer and discussed cervical cancer. He supplemented his discussion with slides and other clinical materials.

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**Dr. R. L. Faucett**, of the section of psychiatry of the Mayo Clinic, spoke at the international forum on alcoholism and highway safety held May 12 and 13. He discussed the effects of problem drinking within the home. The gathering was called "Operation All-Out" and was an attempt to alert business and industry on alcoholism and prevent employee job loss.

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**Dr. J. A. Bargaen**, Rochester, conducted clinics and gave lectures at the University of Louisville school

## OF GENERAL INTEREST

of medicine in Louisville, Kentucky, in May. He also addressed a meeting of the staff of the Veterans Administration there.

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**Dr. J. C. Ivins**, Mayo Clinic, participated in a military medical symposium conducted by the army medical service at Fitzsimons army hospital in Denver, Colorado, in May.

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As a member of the medical committee, **Dr. Jan Tillisch**, Mayo Clinic, attended the meeting of the International Air Transport association in Bermuda in May.

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**Dr. C. W. Rucker**, Mayo Clinic, was a member of the program committee of the American Academy of Ophthalmology and Otolaryngology when it met in New York City the first week in May.

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**Dr. Gordon Lee**, Glenwood, has been appointed medical advisor by the American Cancer Society for Pope County. On May 18, he explained the motion picture, "Breast Self-Examination" at the American Legion Memorial Building.

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**Dr. Hiram E. Essex**, of the Mayo Clinic, delivered this year's Joseph Graham Mayo lecture in the State University of Iowa's medical amphitheater at Iowa City, May 10. His speech, one in the current series of college of medicine lectures by outstanding scientists from the United States and abroad, was entitled "Observations on Vascular Spasm Produced by Various Agents."

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**Dr. Tague C. Chisholm**, Minneapolis, spoke on pediatric surgery at the annual meeting of the Upper Midwest Conference of Nurse Anesthetists.

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**Dr. George Logan**, Rochester, was guest speaker at the Woman's auxiliary of the Four-County Medical Society meeting, May 5, in the Mayo Foundation House. Dr. Logan presented the pros and cons for the Salk polio vaccinations being given to children throughout the United States.

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**Dr. and Mrs. E. C. Wilkins**, Rochester, sailed for Europe aboard the Queen Mary. They toured England, Scotland, Sweden, Denmark, The Netherlands, Belgium, France, Switzerland and Italy before returning to Rochester on July 11. Dr. Elkins is secretary of the American Board of Physical Medicine; he attended the meeting of the International Federation of Physical Medicine in Ostend, Belgium.

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**Dr. K. A. Storsteen**, Duluth, spoke at a meeting of the St. Louis County Medical Society, May 13, at St. Mary's Hospital. His subject was "Surgical Emergencies in Infancy and Childhood."

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**C. F. Cervenka**, New Prague, gave a talk on Health Management at the Rotary club meeting in May. Stressing the complexity of present-day living,

he pointed out how slowing down in all our daily tasks would relieve the inherent tension in many nervous systems.

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**Dr. V. S. Counseller**, Mayo Clinic surgeon, addressed a meeting of the Mexican Urologic Association in Mexico City, May 5.

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The American Cancer Society said that scientists, including two from the University of Minnesota, have found human polio viruses multiply fast and completely destroy at least two types of human cancer tissue while feeding on it in test tubes. The work was done jointly by a group at the Johns Hopkins medical institutions in Baltimore headed by Dr. George O. Gey and another group at the University of Minnesota headed by **Dr. Jerome T. Syvertson**, head of the department of bacteriology and immunology, and **Dr. William F. Scherer**, assistant professor of bacteriology and immunology.

\* \* \*

Resignation of **Dr. Peter Ward** as medical director of the Charles T. Miller Hospital and the Amherst H. Wilder dispensary was announced by the chairman of the board of directors of the hospital and foundation. Dr. Ward has been medical director of Miller hospital and Wilder dispensary since 1930. **William N. Wallace**, present assistant, has been named new administrator.

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Tobacco and lung cancer was the topic of an address given by **Dr. Harold N. Wright** at the Duluth branch of the University of Minnesota. Dr. Wright is professor of toxicology and pharmacology at the University.

\* \* \*

Three professors will retire in June from the faculty of the Mayo Foundation. They are: **Dr. Stuart W. Harrington**, professor in surgery, **Dr. Frederick A. Willius**, professor of medicine, and **Dr. Byrl R. Kirklin**, professor of radiology.

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**Dr. P. J. Pankratz**, Mountain Lake, attended the Southwestern Medical meeting in Worthington on May 10.

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**Dr. L. W. Johnsrud**, Hibbing, was elected president of the Minnesota Surgical Society at its semi-annual meeting in Rochester on May 14. Dr. Johnsrud is affiliated with the Mesaba Clinic in Hibbing.

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**Dr. Donald W. Hastings**, head of the department of psychiatry and neurology at the University of Minnesota, was named chairman of the new medical policy committee of the state department of public welfare. Other members of the policy committee are **Dr. L. R. Critchfield**, Saint Paul pediatrician; **Dr. F. J. Hirschboeck**, Duluth internist; **Dr. A. B. Baker**, professor and director of the university's division of neurology, and **Dr. J. L. Bollman**, head of the section of clinical pathology and biochemistry, Mayo Clinic, Rochester. The committee of the state

## OF GENERAL INTEREST

department of public welfare was created by the 1953 State legislature.

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**Dr. Giles A. Koelsche**, assistant professor of medicine at the Mayo Foundation, has been appointed a member of the scientific and educational council of the American Foundation for Allergic Diseases, according to an announcement from foundation headquarters in New York City. Composed of ten nationally known research scientists and physicians, the council has the responsibility of directing the medical program of the foundation, which was established a year ago by the American Academy of Allergy and the American College of Allergists as a non-profit organization of physicians and laymen to work in the field of the allergic diseases.

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**Dr. Mellvin E. Lenander**, St. Peter, was reappointed by Governor Anderson to serve a full seven-year term on the state board of medical examiners.

\* \* \*

**Dr. M. W. Hanson** of the Carleton College health service attended a conference on health, in New York City, in May.

\* \* \*

**Dr. J. Arthur Myers**, University of Minnesota medical school, spoke to the 3,000 delegates of the convention of the National Tuberculosis Association. **Dr. Walter J. Marcle**, Minneapolis, tuberculosis consultant to the Minnesota health department, was honored as a founder of the organization. **Dr. Marcle** established Minnesota's state tuberculosis sanatorium at Walker, and was the first medical director of Glen Lake sanatorium.

\* \* \*

**Dr. E. C. Elkins**, Mayo Clinic, conducted a polio clinic for area physicians in April at the Mankato Rehabilitation Center. **Dr. Elkins** is head of the polio ward at St. Mary's hospital in Rochester. He is also a member of the physical medicine staff of the Mayo clinic.

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**Dr. B. A. Flesche**, Lake City, attended a symposium of army medicine of the 5th Army Reserve Corps in May. Sessions were held at Fitzsimons Army Hospital.

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**Dr. F. J. McCaffrey**, Minneapolis, gave a talk on "Operative Obstetric Problems" and gave a forceps mannequin demonstration for the Tri-County Medical Group, Camp Release District Medical Society, Chippewa, Lac qui Parle, and Yellow Medicine counties at Montevideo on May 13.

\* \* \*

At the American Psychiatric Association meeting in Saint Louis in May, **Dr. Henry Hutchinson**, Superintendent of the Moose Lake State Hospital, **Dr. Ralph Rossen**, Superintendent of the Hastings State Hospital, and **Dr. Burton P. Grimes**, Superintendent of the St. Peter State Hospital, were elected

as Fellows of the American Psychiatric Association. All three of these doctors had been members of the American Psychiatric Association for some years.

\* \* \*

At the American Psychiatric Association meeting in Saint Louis, in May, the committee on certification of mental hospital administrators of the American Psychiatric Association certified **Dr. Henry Hutchinson**, Superintendent of the Moose Lake State Hospital, as a competent mental hospital administrator.

\* \* \*

The monthly staff meeting of St. Joseph's Hospital, Brainerd, was addressed by **Drs. Erling S. Platau** and **A. J. Schroeder**, Minneapolis, who spoke on the subject of "Pediatric and Obstetric Aspects of Hemolytic Disease of the Newborn."

\* \* \*

**Dr. William J. Martin**, consultant in medicine at the Mayo Clinic, was the speaker at the last of four Spring meetings of the Southwestern Minnesota Medical Society. **Dr. Martin** discussed "General Principles in the Use of Antibiotics."

\* \* \*

**Dr. Ralph G. Ghormley** and **Dr. John J. Morton**, members of the Robert Jones club, national organization of orthopedic surgeons, attended the meeting which was held in Washington University school of medicine for the annual clinic program in May.

\* \* \*

**Dr. D. S. Childs, Jr.**, of the Mayo Clinic, attended the first annual meeting of the Society of Nuclear Medicine in Seattle, May 29 and 30. He presented a paper entitled, "Training of Residents in Radiosotope Technics."

\* \* \*

**Dr. C. H. Slocumb**, Mayo Clinic, attended a meeting in Minneapolis, May 29, regarding formation of a Minnesota chapter of the Arthritis and Rheumatism Foundation.

\* \* \*

Surgical chiefs of thirty-four veterans hospitals in ten states attended a two-day surgical institute June 3-4. The surgeons discussed latest techniques and developments in thoracic, abdominal and vascular surgery.

\* \* \*

**Dr. Silas W. Giere**, Benson, left May 23 for New York where he sailed for Norway. **Dr. Giere** will spend the summer months touring Norway, Sweden, Denmark and England.

\* \* \*

**Robert P. Jeub**, Hennepin County Medical Society member, now a Captain in the Air Force stationed at the Lackland Base, San Antonio, Texas, presented a paper on "Location and Treatment of Head Injuries" at the Air Force World Wide Sports Conference, held at the University of Oklahoma on May 21.

# CHANGES IN LOCATION

**Dr. Robert Kallsen** has joined Dr. C. M. Marshall at the Cuyuna Range Clinic in Crosby. Previously he practiced in La Jolla, California.

\* \* \*

**Dr. R. J. Camp** has become associated with the Madison Clinic. For the past four years he has been on the staff of the University of Oklahoma School of Medicine.

\* \* \*

**Dr. R. M. Lundblad** is leaving Clara City to return to the University of Minnesota for further study.

\* \* \*

**Dr. Roger Parsons** and **Dr. Kenneth Moulton** are opening a medical practice in St. James. Both men graduated from the University of Minnesota last year and have been interning at St. Joseph's Hospital in Saint Paul.

\* \* \*

**Dr. Paul Brabec** has joined Dr. Herman Just in the general practice of medicine and surgery in Hastings. He previously had been in practice in Bagley.

\* \* \*

**Dr. D. W. Selzer**, formerly of Manhattan, Kansas, is assisting Dr. F. C. Closuit in Aitkin until the middle of September, when he plans to go to Rochester on a fellowship.

\* \* \*

**Dr. William E. Walter** is opening an office for the practice of medicine in Wanamingo the first part of August. He is at present completing his internship training at General Hospital in Minneapolis.

\* \* \*

**Dr. Charles E. Turbak** is leaving Canby to take a postgraduate course in surgery as a resident doctor at Ancker Hospital in Saint Paul.

\* \* \*

**Dr. Royden A. Belcher** and **Dr. C. J. Swendseen** have joined the staff of the Oliver Clinic in Graceville. Dr. Belcher recently completed his internship at Ancker Hospital in Saint Paul, and Dr. Swendseen was associated in practice in Minneapolis for the past year.

\* \* \*

**Dr. Vincent Ryding** joined the Surgical and Medical Clinic of Albert Lea as its surgeon. He has been the senior resident in surgery at the Northwestern Hospital in Minneapolis for the past year.

\* \* \*

**Dr. Roy G. Holly** has taken over a new position as head of the obstetrics department for the University of Omaha. Formerly he was an associate professor of obstetrics and gynecology at the University of Minnesota.

\* \* \*

**Dr. Frank A. Rudolph**, formerly of Rapid City, South Dakota, has opened his practice of medicine in Sandstone.

# BLUE SHIELD-BLUE CROSS NEWS

In the Blue Shield financial and statistical report for the first four months of 1954 which has just been released, a marked increase is shown in the number of claims paid and the total amount paid for claims. In the first four months of 1954, Blue Shield has paid out more than in any other identical period in its history and has returned to the subscribers a greater portion of the cash income from subscribers than before. Though the financial data available for the first four-month period reflect a greater increase in claims payments dollar-wise, only two months of the four-month period reflect the increase in benefits which became effective January 1, 1954, since payments in January and February were, to a great extent, for services rendered to patients during 1953.

Records in the Blue Shield Claims Department show the following numbers of claims processed for payment during each of the first four months of 1954: January, 9,506; February, 9,480; March, 10,990; April, 11,195. These figures show that the marked increase occurred in March and April. This fact is of further significance in that most of the claims paid in January and February were for services rendered prior to January first, whereas those paid in March and April involved services rendered after January first, the date when a large number of benefit increases became effective. The total number of claims paid during the first four months of 1954 was 41,171, whereas during the same period in 1953, 40,376 claims were paid.

The financial report for April shows a comparable increase in the cost of claims for the first four months of 1954. For instance, while in January \$366,994 was paid for claims and \$375,340 was paid for claims during February, in March claims costs increased to \$449,983 and in April claims costs amounted to \$449,463. These figures show a total of \$1,641,781 paid for claims during the first four months of 1954, or an average of \$410,445 a month. This is to be compared with \$1,465,119 paid for claims during the first four months of 1953, or an average of \$366,279 a month for this period in 1953. The total increased cost of claims for the first four months of 1954, as compared with the same period in 1953, amounted to \$176,662 or \$44,165 per month.

Translated into the percentage of the cash earned income from subscribers, these figures show 85.1 per cent was spent for claims in the first four months of 1954 as compared with 81.6 per cent during the same period in 1953.

In considering the data presented, two factors are of importance. Customarily the first four months of the year show greater utilization or a larger number of claims than similar periods in the balance of the year. Also, part of the increased cost is to be attributed to the increase of benefits which became effective January 1, 1954.

Hospitalization expense incurred by Blue Cross subscribers during the month of April, 1954, amounted to \$1,503,406.98. This expense is 2.9 per cent greater than anticipated. For the first four months of 1954, \$5,854,094.92 has been incurred for the care of Blue Cross sub-

(Continued on Page 544)



## BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

**THE PAINFUL PHANTOM.** Psychology, Physiology and Treatment. Lawrence C. Kolb, M.D., Section of Psychiatry, Mayo Clinic, Rochester, Minnesota. 50 pages. Price \$1.50, paper cover. Springfield, Illinois: Charles C Thomas, 1954.

**GERIATRIC MEDICINE.** Medical Care of Later Maturity. Third Edition. Edward J. Stieglitz, M.S., M.D., F.A.C.P. Consulting Internist, Suburban Hospital, Bethesda, Maryland and Washington Home for Incurables; Chairman of Staff, 1945-47, Suburban Hospital, Bethesda; Consultant in Geriatrics, Chestnut Lodge, Rockville, Maryland, St. Elizabeth's Hospital and Veterans Administration; Associate, Washington School of Psychiatry; Lecturer in Industrial Medicine, New York University—Bellevue Post-Graduate Medical School; Chairman, Advisory Council on Professional Education, Commission on Chronic Illness; Consulting Editor, *Geriatrics*; formerly Associate Clinical Professor of Medicine, Rush Medical College, University of Chicago; Washington, D. C. 718 pages. Illus. Price \$15.00, cloth. Philadelphia: J. B. Lippincott Co., 1954.

**CARDIOVASCULAR SURGERY.** Gerald H. Pratt, M.D., F.A.C.S. Associate Clinical Professor of Surgery, New York University College of Medicine; Attending Surgeon and Chief of Vascular Clinic, St. Vincent's Hospital, City of New York; Attending Surgeon, St. Clare's Hospital, City of New York; diplomate of American Board of Surgery; Consultant to the U. S. Naval Hospitals, Meadow Brook Hospital, Long Island; All Souls Hospital, Morristown, New Jersey. 843 pages. Illus. Price \$15.00, cloth. Philadelphia: Lea & Febiger, 1954.

**LET'S EAT RIGHT TO KEEP FIT.** Adella Davis, A.B., M.S. Consulting nutritionist. 322 pages. Price \$3.00, cloth. New York: Harcourt, Brace & Co., 1954.

**BEYOND THE GERM THEORY.** The Roles of Deprivation and Stress in Health and Disease. A New York Academy of Medicine Book. Iago Galdson, M.D., Editor, 182 pages. Price \$4.00, cloth. New York: Health Education Council, 1954.

**PERIPHERAL CIRCULATION IN MAN.** Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch., and Jessie S. Freeman, M.B., B.S., D.P.H.; assisted by Joan Etherington. For the Ciba Foundation. 219 pages. Illus. Price \$6.00, cloth. Boston: Little, Brown & Co., 1954.

**75 YEARS OF MEDICAL PROGRESS.** Louis H. Bauer, M.D., Editor. 279 pages. Illus. Price \$4.00, cloth. Philadelphia: Lea & Febiger, 1954.

**SYNOPSIS OF OBSTETRICS.** By Jennings C. Litzenberg, B.Sc., M.D., F.A.C.S. Late Professor Emeritus of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis. 4th ed. rev. by Chas. E. McLennan, M.D., Professor of Obstetrics and Gynecology, Stanford University School of Medicine, San Francisco. St. Louis: C. V. Mosby Co., 1952. 378 p. Illus. Cost \$5.50.

This treatise, originally written by a well-known and

beloved authority on obstetrics and now revised and edited by a former associate of his, will always be well received and certainly well worth reading and reviewing. It definitely adheres to the well-known conservative tendencies of Dr. Litzenberg, but has kept up with the times. When one is lost and needs guidance, without any lengthy reading, he is put back on the right track.

The book serves as a guidepost and keeps one from dangerous detours. It mentions old methods and, if they are obsolete, depreciates them. It contains a clear, concise explanation of the Rh factor and its problems. This is about as clear as one can ever get on this subject in so short a space.

All in all, this is a very useful book, both for the general man and the specialist.

J. F. BICEK, M.D.

**FUNDAMENTALS OF PSYCHOANALYTIC TECHNIQUE.** By Trygve Braatøy, M.D., formerly Head of Psychiatric Department, Ullevol General Hospital, Oslo, Norway. 404 pages. New York: John Wiley & Sons, Inc., 1954. Price \$6.00.

Known for his attention to descriptive material and the biological and physiological aspects of psychoanalysis, the late Trygve Braatøy concentrated on these points in his final work, "Fundamentals of Psychoanalytic Technique," published in May by John Wiley & Sons.

The new book departs from the "logical" procedure that parallels the development of psychoanalytic treatment. A volume for analysts in training, it gives the student a greater freedom in approach by beginning with the emotions of the analyst himself. Braatøy then goes into the questions of diagnosis and indications for psychoanalytic treatment, including risks, evaluates the therapeutic potentialities and dangers, and concludes with general and special aspects of interpretation.

In a letter to his publisher, Dr. Braatøy stated his belief and practice in these words: "The unconscious, the infantile experiences of a patient are important in explaining his present behavior and words. But this indirect explanation must fit what the therapist can see and hear and feel directly.

Although he did not underestimate the value of theory, Dr. Braatøy believed in the importance of relating psychoanalysis to its biological and physiological roots. He classified his own work as belonging to the psychosomatic approach in contemporary psychiatry. "The risks connected with explanations derived from physiology and experimental biology," Dr. Braatøy wrote, "are best countered by always returning to clinical material (which) decides whether our approach, including our theory, is right."

Minnesota-born and of Norwegian ancestry, Dr. Braatøy completed his medical studies in Norway, spent a period of neurological work in the Clinique Charcot in Paris, and later at the Psychoanalytical Institute of Berlin under the late Dr. Otto Fenichel. He was the author of many books and papers, the latest volume partly written during his two-year stay at The Menninger Foundation as a training analyst. In 1953 he resigned as head of the psychiatric department of Ullevol General Hospital in Oslo in order to devote more time to therapeutic work.

## BOOK REVIEWS

**THE BILLROTH I GASTRIC RESECTION**, with Especial Reference to the Surgery of Peptic Ulcer. By Horace G. Moore, Jr., and Henry N. Harkins. 175 pages. Illus. Price \$7.50. Boston: Little, Brown and Company, 1954.

The reviewer found this book a particular stimulus and pleasure. From the standpoint of make-up, typography, type and quality of illustrations, and other purely mechanical matters, it is well done, a pleasure to handle, a pleasure to read. The subject matter concerns not only the Billroth I operation, but includes a great deal of valuable, informative and interesting material on the larger general subject of surgery for peptic ulcer. To illustrate—there are eight main chapters: of these, only two deal primarily with the Billroth I procedure. These are Chapter V on Surgical Technique, comprising an extensive, detailed, step-by-step elucidation that is clear and graphic, with excellent illustrations, and in itself well worth the price of admission, and Chapter VII on Criticisms and Advantages, which appealed to the reviewer as a fair and honest recital of the pros and cons without the weighting and bias occasionally seen in the dissertations of those who are enthusiastic proponents of something that is not generally or entirely accepted. The other chapters deal with the history and rationale of gastric resection for peptic ulcer, selection of patients, pre- and postoperative care, and postgastrectomy syndromes. These chapters deal well and fully with the points enumerated in clear and concise fashion. The book ends with a series of interesting biographical sketches of some of the outstanding gastric surgeons of the past.

This book fills a real need. In any informal discussion among surgeons, many of the objections to the Billroth I procedure are grounded on a species of handed-down folklore. The disuse into which the operation has fallen is a good illustration of how a procedure can, because of poor results or unhappy experiences in past years, suffer unmerited neglect. Newer techniques and concepts, here collected in one readily available compendium for the first time, have vitiated many of the arguments which have, starting a long time ago, been carried into the present as proofs of the operation's undesirability, without much in the way of critical re-evaluation. While the reviewer does not feel convinced that all gastric resections should be of the Billroth I variety, it should be more true than it now is, as Dr. J. M. Waugh points out in his preface, that every gastric surgeon should be able to carry out expertly a Billroth I and a Billroth II operation, just as the skilled gynecologist can carry out both vaginal and abdominal hysterectomy.

The book has a rather limited field of interest, namely, surgeons doing gastric surgery, but within that field the reviewer feels that the book can be unhesitatingly recommended. Many surgeons would like to use the Billroth I more, but have been reluctant to do so because of unfamiliarity with it. This book has the answers and the help that are needed to banish such unfamiliarity. The reader (the reviewer, too) may not agree with everything that is said in the book, but he will find very rewarding a diligent and thorough perusal of it, as did

the reviewer. The material is presented sanely, clearly and in fulsome detail in a matter where the previously available information was scarce and hard to come by. The Billroth I operation can and should be done more than it is, and this book is both a stimulus in that direction, and an outstanding aid to those wishing to travel in that direction.

## BLUE SHIELD-BLUE CROSS NEWS

*(Continued from Page 542)*

scribers, or 2.0 per cent greater than anticipated for the year to date.

For the first two months of 1954, 186 cases each amounting to over \$1,000.00 were allowed by Blue Cross. The total amount of benefit for these 186 cases was \$248,078.99 or an average of approximately \$1,334.00 per case. The average length of stay on these more than \$1,000.00 cases was 53.6 days.

## MEDICAL MALPRACTICE INSURANCE

*(Continued from Page 538)*

naturally muses on what can be done to ameliorate the situation.

Our profession has been confronted in the past with equally as challenging problems, and they have been corrected to the degree whereby we are the envy of our neighbors. Here is a challenge our state association should consider very seriously. Personally, I have complete confidence that a small group headed by our nationally recognized attorney, Manley Brist, can build an insurance structure of which our State Medical Association would be proud. I am confident that there would be no difficulty in obtaining financial aid from the individual members as an operating fund to get it launched, even as we did in the building of the Blue Shield Insurance company. If we, as a state medical family, operated such a mutual insurance policy to protect us, we then would certainly play a most cautious hand among ourselves, as well as toward the patient, when this ugly malpractice cloud appears on the scene. It would cement our family into a finer appreciation of our mutual problems toward one another. Thoughtful consideration would be a strong guide and a helpful brake in these moments. Human nature being as it is, we would not be so liable to act maliciously in matters pertaining to our own insurance child.

Again, our medical family is confronted with a challenge. I believe, with united effort we can lick it to the envy of our neighbors.

Fairmont, Minnesota  
June 1, 1954

J. J. HEIMARK, M.D.

MINNESOTA MEDICINE

# Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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